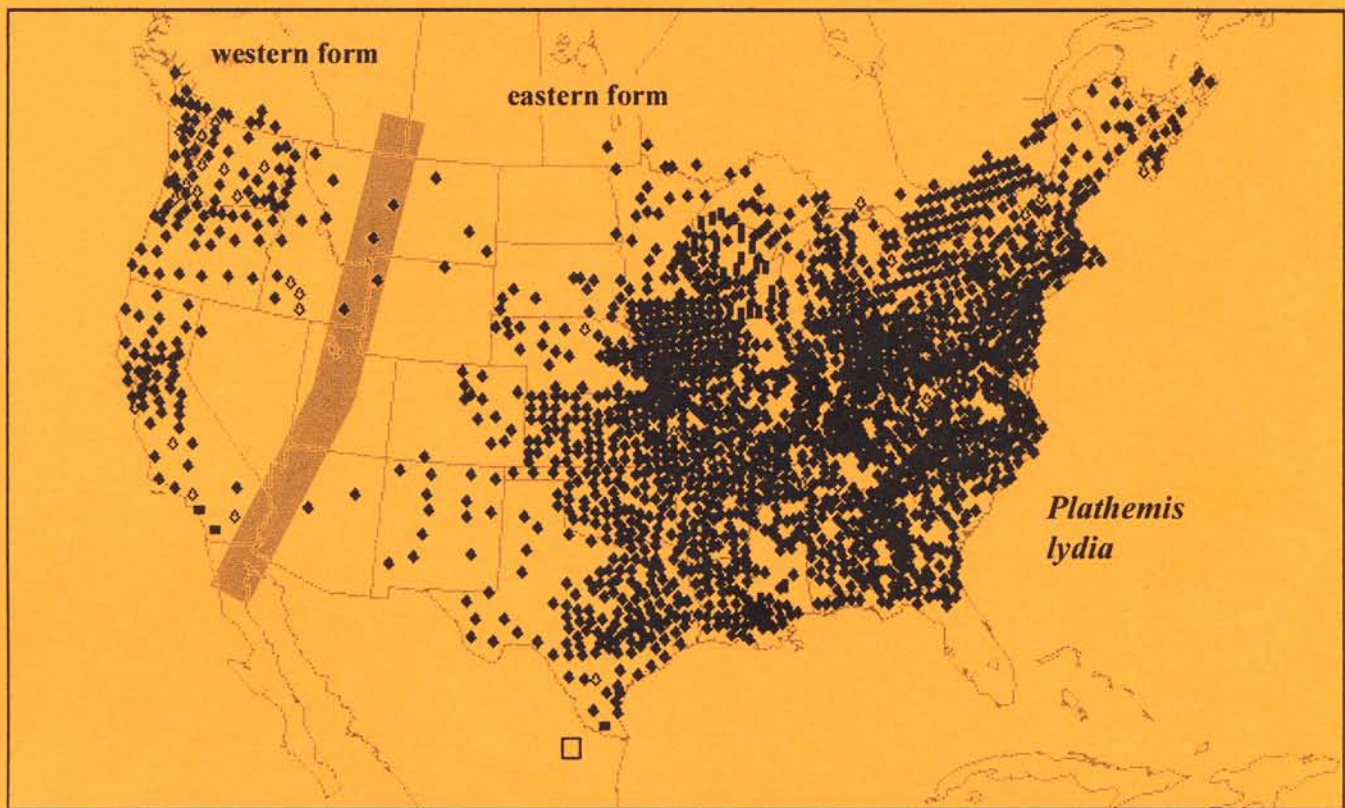


BULLETIN OF AMERICAN ODONATOLOGY



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DISTRIBUTION OF NORTH AMERICAN ODONATA. PART II:
MACROMIIDAE, CORDULIIDAE AND LIBELLULIDAE

Thomas W. Donnelly, p. 61 - 32

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DISTRIBUTION OF NORTH AMERICAN ODONATA. PART II: MACROMIIDAE,
CORDULIIDAE, LIBELLULIDAE¹

Thomas W. Donnelly, 2091 Partridge Lane, Binghamton NY 13903, tdonelly@binghamton.edu

ABSTRACT: Dot-map presentations show the distributions for species of Macromiidae, Corduliidae, and Libellulidae in North America. Additional comments, including subspecies information, are provided for several species.

INTRODUCTION: This is the second of a series that started with Donnelly (2004a). Introductory and explanatory comments in that number will not be repeated here.

SUBSPECIES, AND SPECIES OF SPECIAL INTEREST:

Macromia illinoensis: Donnelly and Tennesen (1994) described structural variations in the taxa *georgina* and *illinoensis* and proposed that they had a subspecific relationship. They noted four counties where the taxa varied smoothly between the subspecific end members, and noted that in a fifth county (Macon Co. NC) there were separate population of the two which did not so vary. May and Carle (1996) noted that "The two taxa seem distinct in structural characters in New Jersey and are sympatric in Virginia and North Carolina." We see no reason to alter our conclusion.

Macromia X wabashensis: I treat this as a hybrid, probably between *taeniolata* and *pacifica*. The Texas specimens might alternatively have *annulata* as one parent.

Epitheca costalis*, *cynosura*, and *petechialis: These taxa have caused extensive difficulties. Recent examination of numerous specimens from eastern Texas, Oklahoma, Kansas, and Colorado, have shown unspotted *petechialis* is far more widespread than previously recognized. Probably plains (western Kansas, Colorado, western Oklahoma, central and western Texas) records of "*costalis*" and "*cynosura*" are probably pale-winged *petechialis*. The only reliable method of distinguishing among these three taxa is by a close examination of the male cerci and abdominal base.

In several localities in Ohio and scattered localities elsewhere, *costalis* and *cynosura* appear to intergrade freely, although in other localities, no evidence of intergradation has been detected. While these species appear to be valid biological

species, the extent of, and the reasons for, their apparent intergradation are not yet understood.

Epitheca semiaquea: There is a broad gap in the distribution of this species, with no records from north-central Florida to Texas. Specimens from Massachusetts appear to lack the wing spots and have been called *cynosura*.

Somatochlora hineaea: The records from Alabama, Ohio, and Indiana are historic.

Williamsonia lintneri: The record from Albany, New York is historic.

Erythemis simplicicollis* and *collocata: The apparent subspecific relationship between these two taxa was discussed by Donnelly (2004b).

Leucorrhinia proxima: The eastern and western forms are different in both appearance and habits. The eastern forms have yellow pale color and become quite pruinose. They commonly do not perch in conspicuous positions. The western forms are patterned with bright red, are far less pruinose, and perch in very exposed positions. The boundary between the two forms appears to be approximately in western Wisconsin.

Orthemis antillean species: This species has not been named. It flies with ferruginea around Miami, and the two can be distinguished by several differences in appearance. The antillean form ranges to Trinidad, but is not certainly specifically distinct with a co-occurring, and also unnamed, purple form in Hispaniola, Puerto Rico, and the Virgin Islands. It is premature to name any of these forms.

Perithemis tenera: This species appears to grade smoothly into the tropical "species" *mooma*, and several specimens from southern Texas could be referred to *mooma*. It is more realistic to regard them as one wide ranging and variable species. Some of the Mexican records shown are of "*mooma*", but Mexican records of *tenera* are numerous and widespread

Plathemis lydia: Eastern and western forms, distinguished by the shape of the styli on the basal abdominal segment (Donnelly, 1991), grade

¹Bulletin of American Odonatology 8(1) 1:32

together in a narrow zone in west-central Montana to western Wyoming.

Sympetrum internum and *rubicundulum*: Throughout most of their considerable overlapping ranges, these appear to be easily distinguishable species (Williamson, 1933). Along the Atlantic seaboard, from at least New Jersey to Cape Cod, the most abundant form appear to be *rubicundulum*, but with a hamule intermediate between this species and *internum*. Specimens of apparently valid *internum* are found sporadically in the same area.

Sympetrum internum and *obtrusum*: Hybrids between these two species have been found at several northeastern localities (Donnelly, 1991).

Sympetrum semicinctorum: Specimens taken in westernmost Ontario and Wisconsin, and in Northeastern Minnesota, appear to be transitional between *semicinctorum* and *occidentale*. I believe the two to have a subspecific relation, as shown. I have not further differentiated californicum and *fasciatum*.

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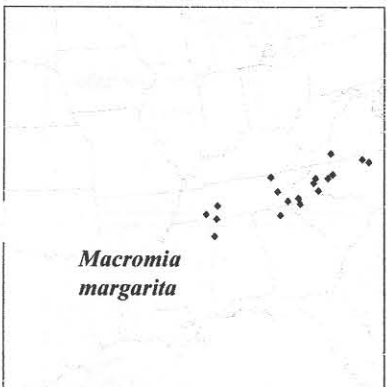
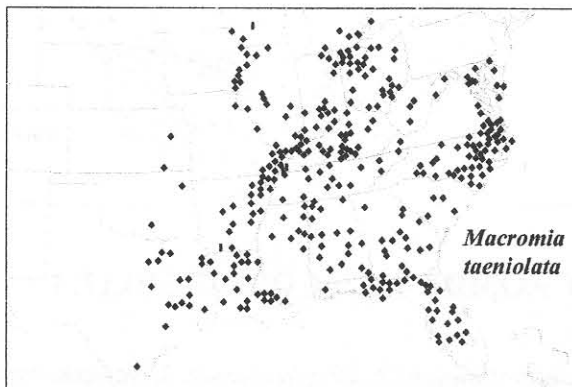
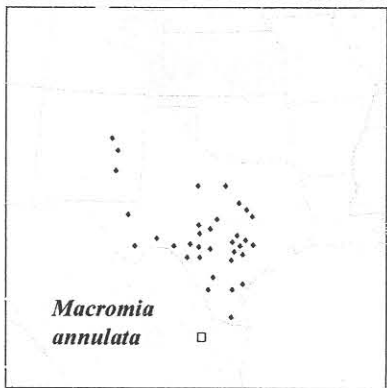
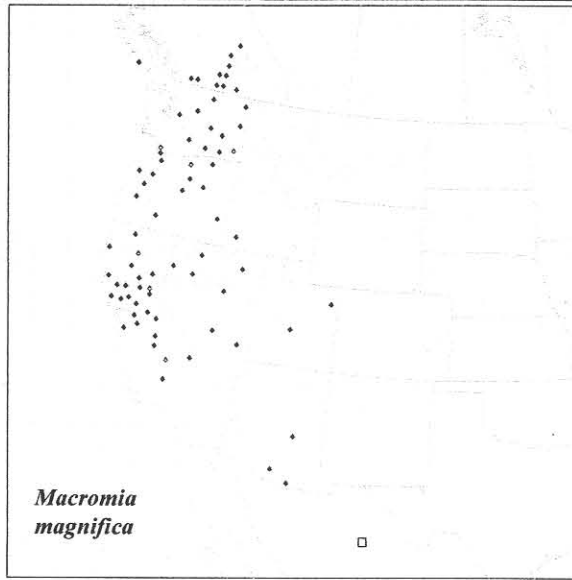
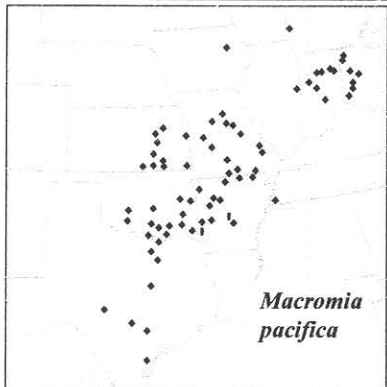
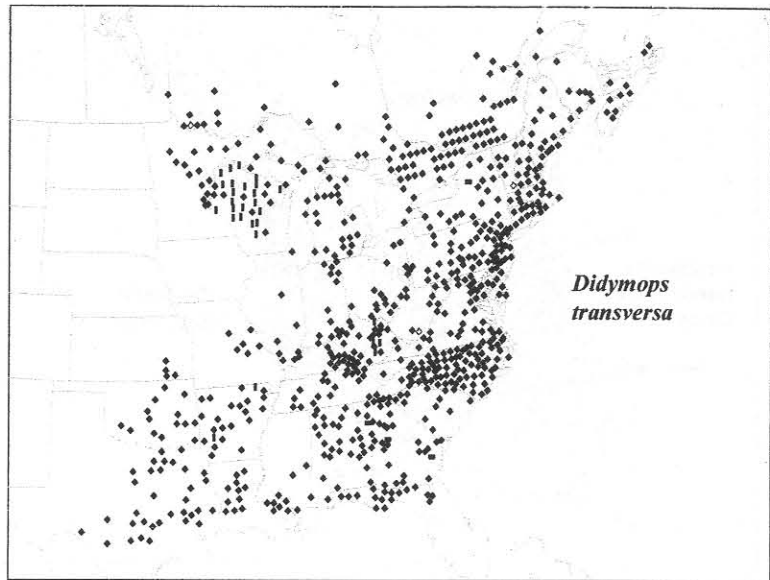
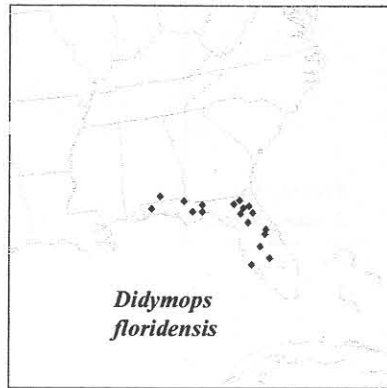
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Tramea calverti L6
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Tramea insularis L5
Tramea lacerata L18
Tramea onusta L18

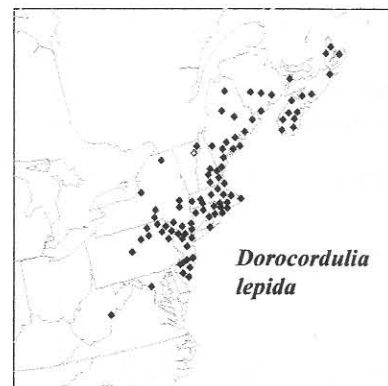
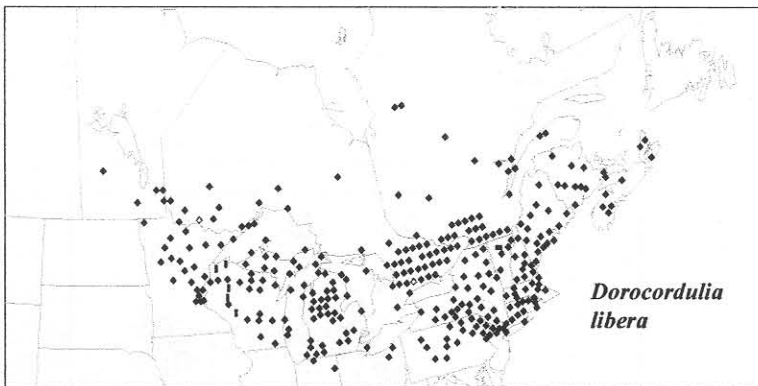
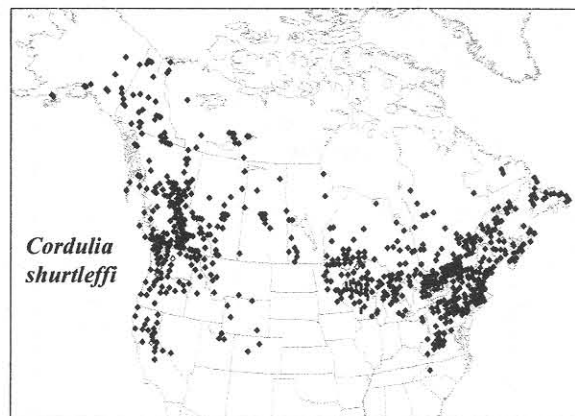
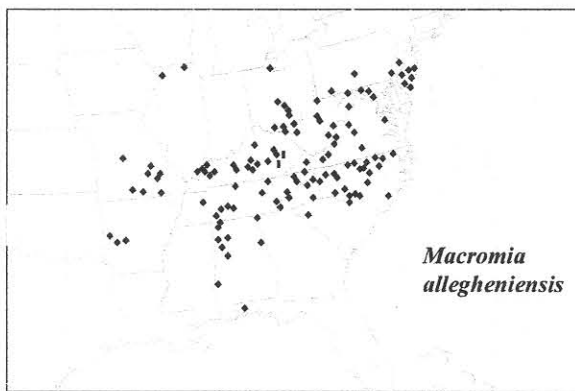
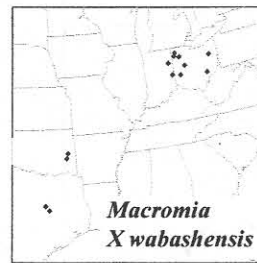
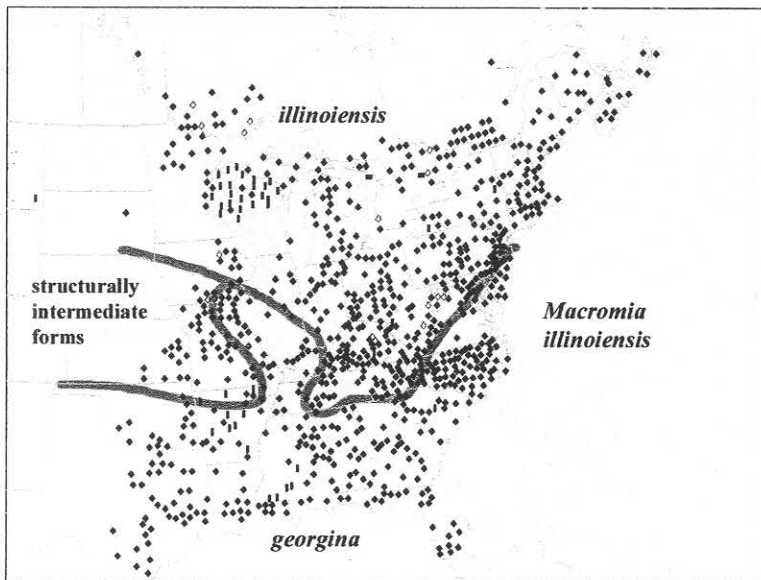
- ◆ Adult specimen; often used for stage unspecified
- Photograph of adult
- ▮ Larva or exuviae
- ◇ Sight Record
- Record specified for state (US or Mexico) or region

Key to the symbols used in the maps.



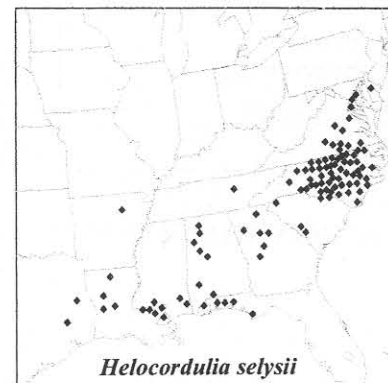
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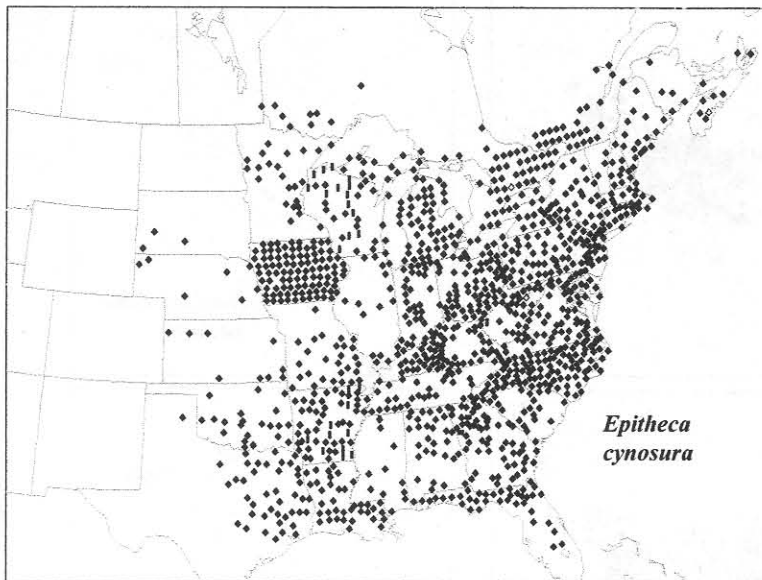
Didymops floridensis, transversa
Macromia pacifica, annulata, georgina, magnifica, taeniolata
margarita



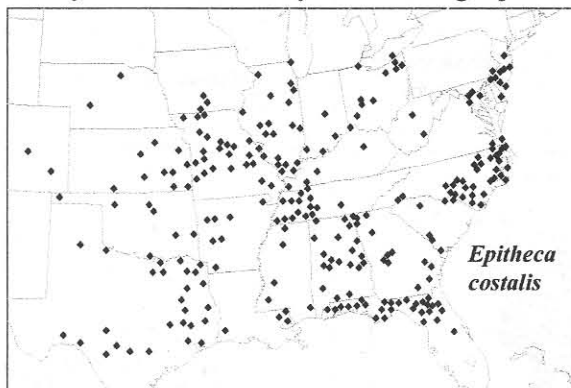
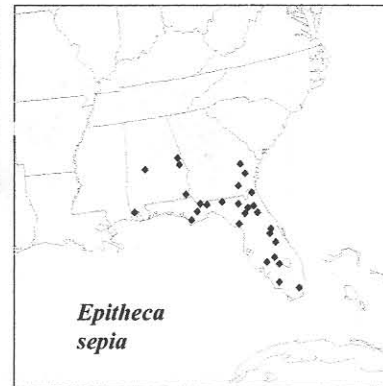
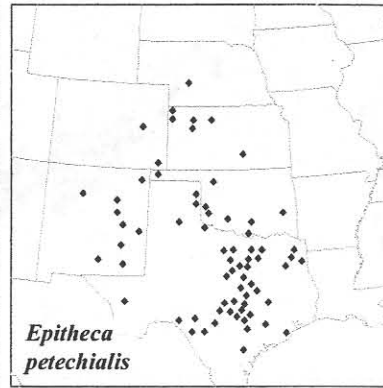
MACROMIIDAE 2; CORDULIIDAE 1

Macromia illinoensis, *allegheniensis*, *X wabashensis*
Cordulia shurtleffi
Dorocordulia libera, *lepida*
Helocordulia selysii

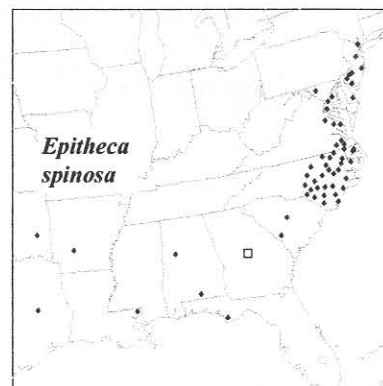
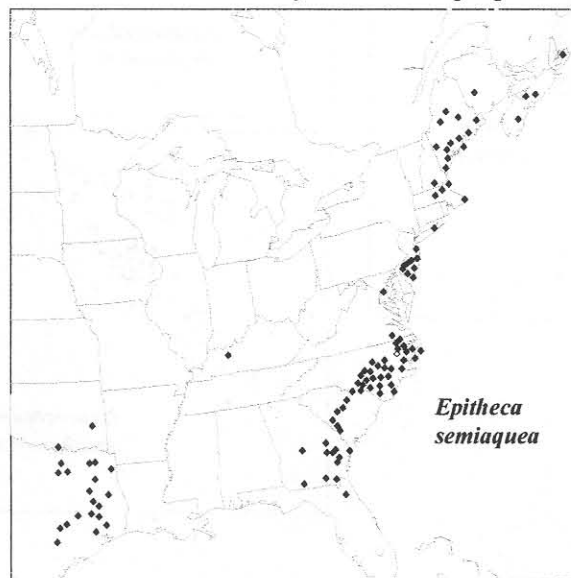
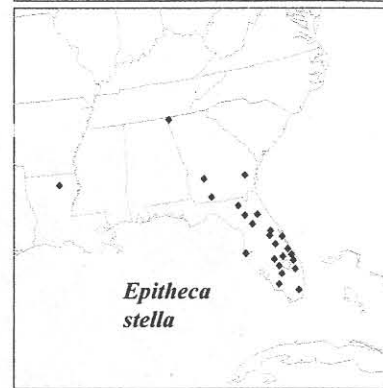




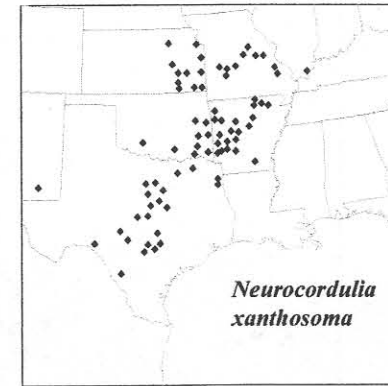
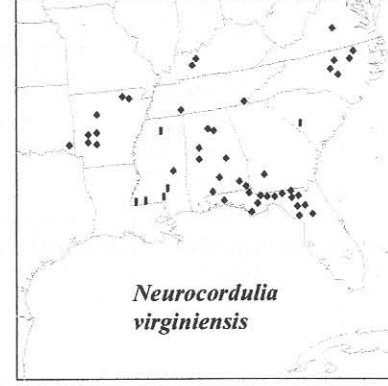
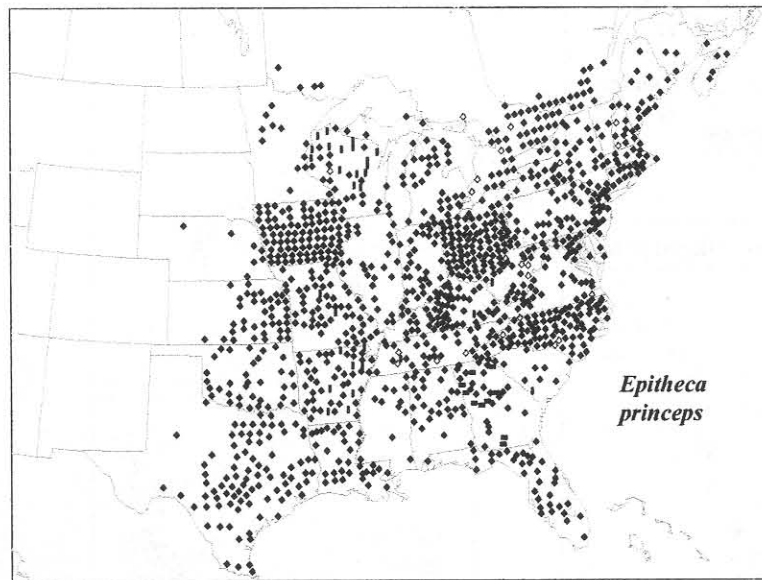
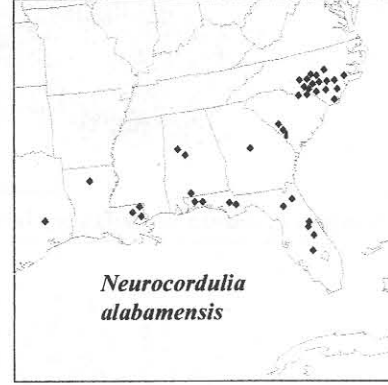
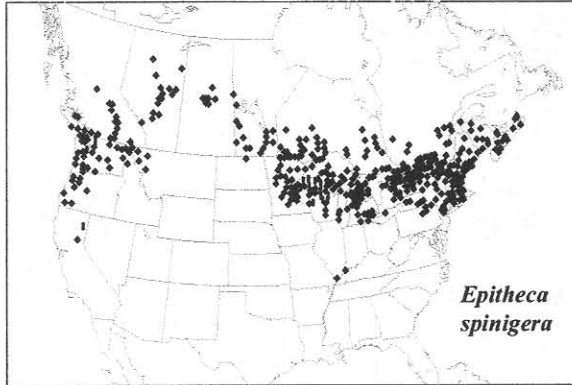
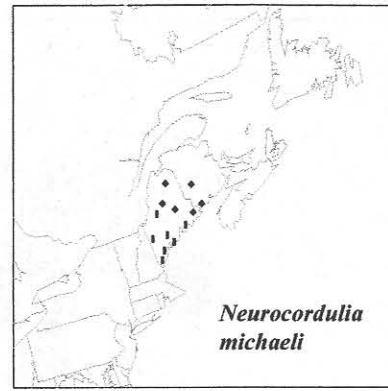
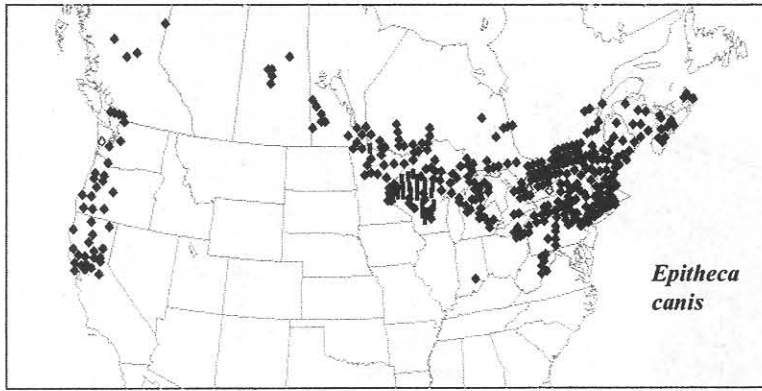
Many western *cynosura* records may be clear-winged *petechialis*.



Many western *costalis* records may be clear-winged *petechialis*.



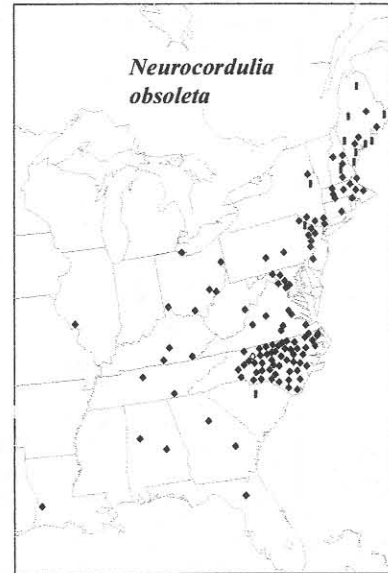
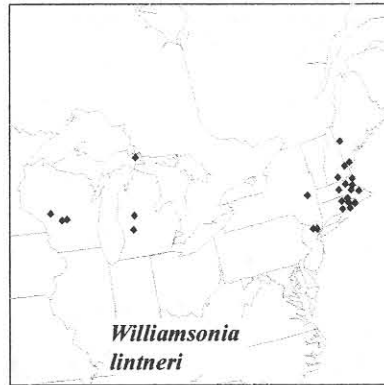
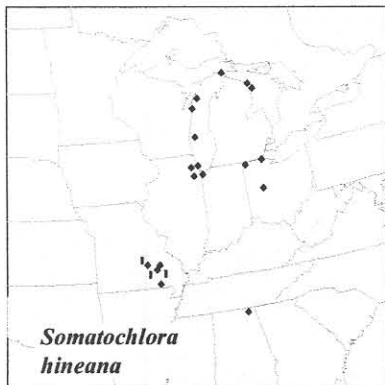
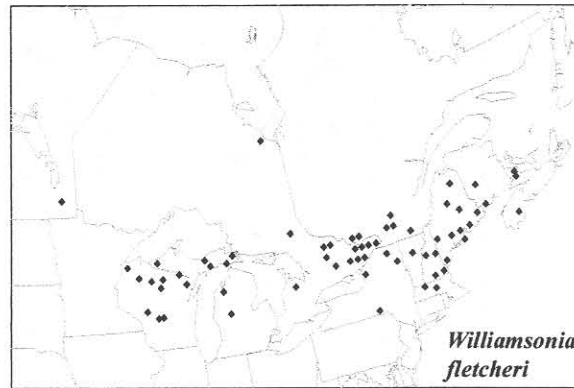
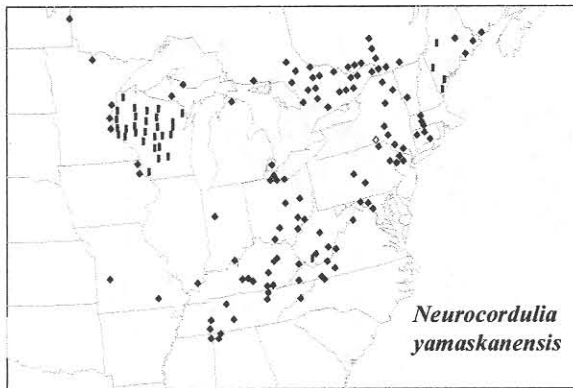
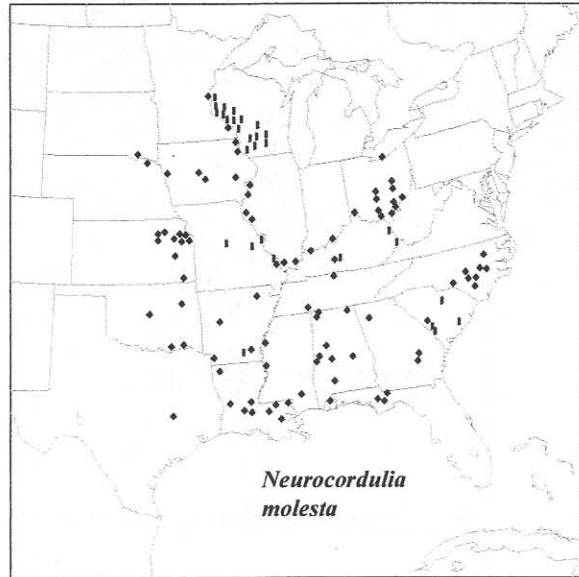
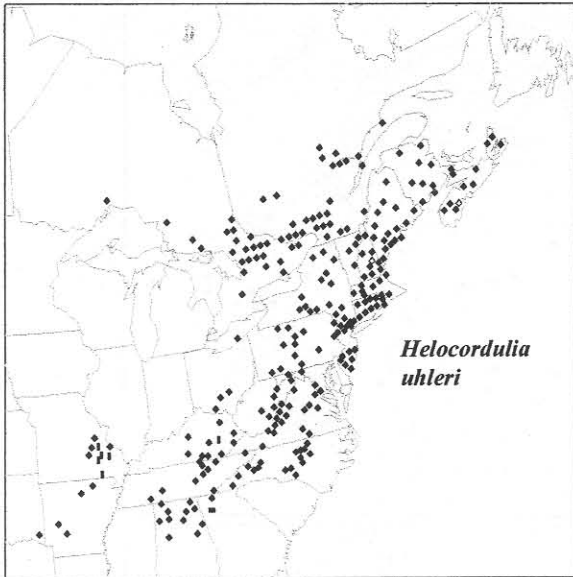
CORDULIIDAE 2 *Epitheca cynosura, costalis, petechialis, sepia, stella, spinosa*



CORDULIIDAE 3

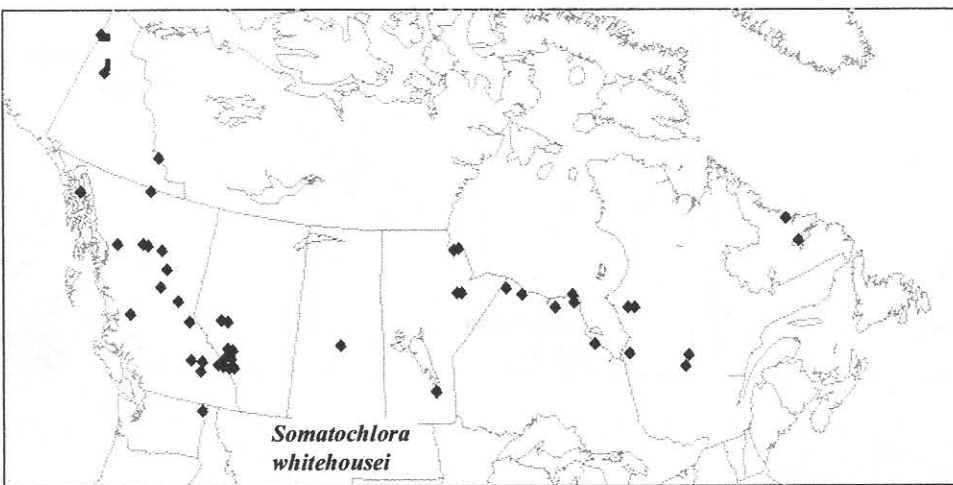
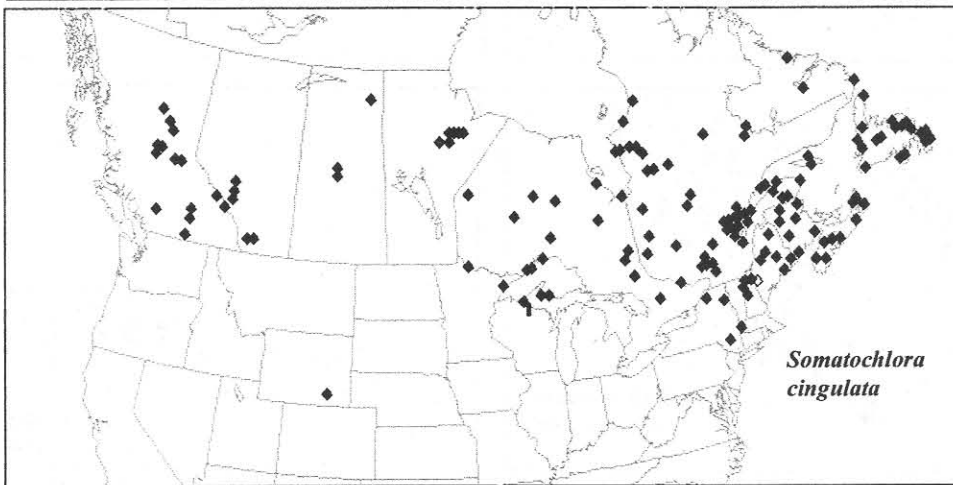
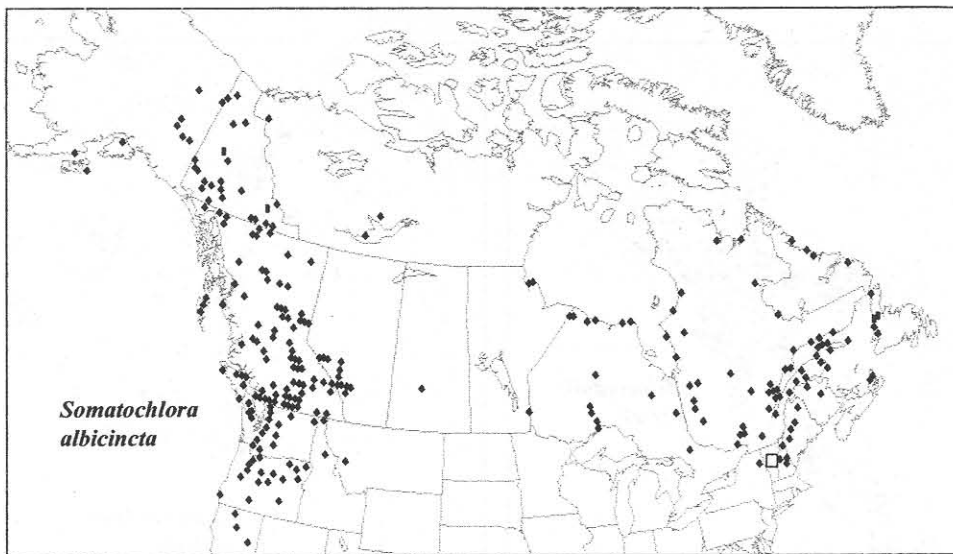
Epitheca canis, spinigera, princeps

Neurocordulia alabamensis, michaeli, virginiensis, xanthosoma

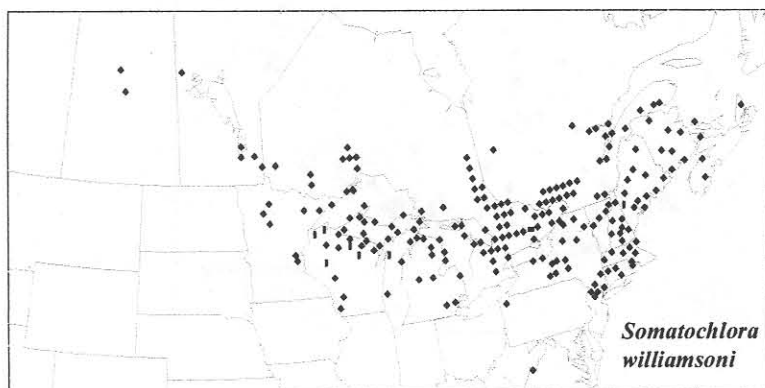
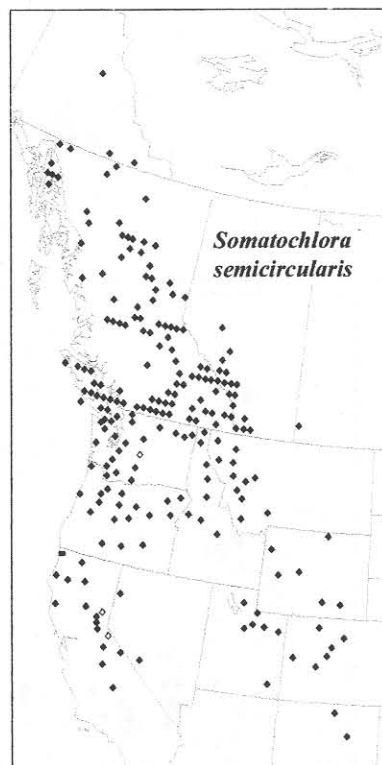
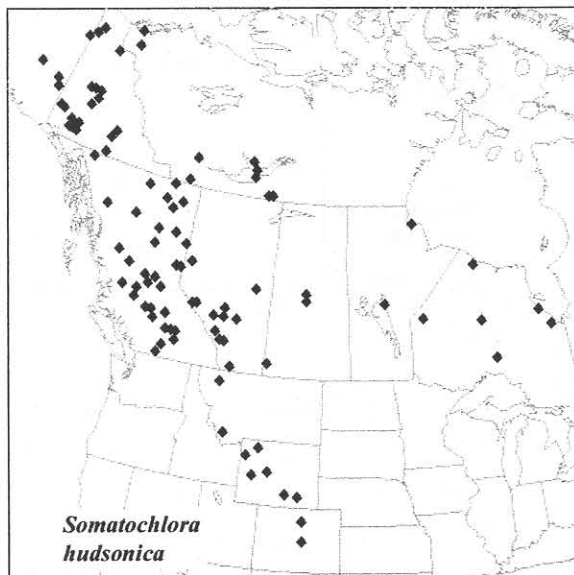
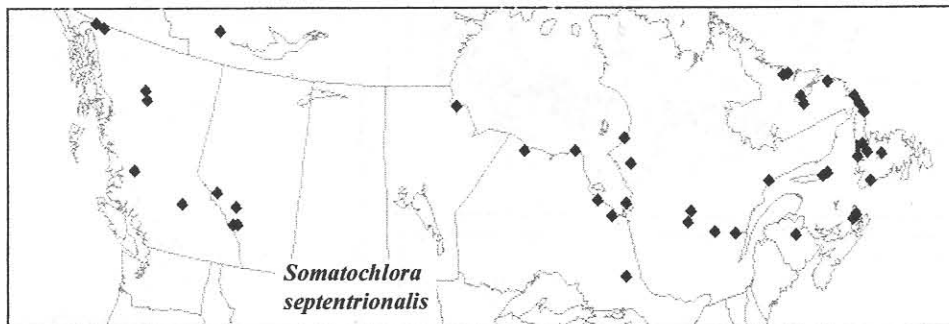
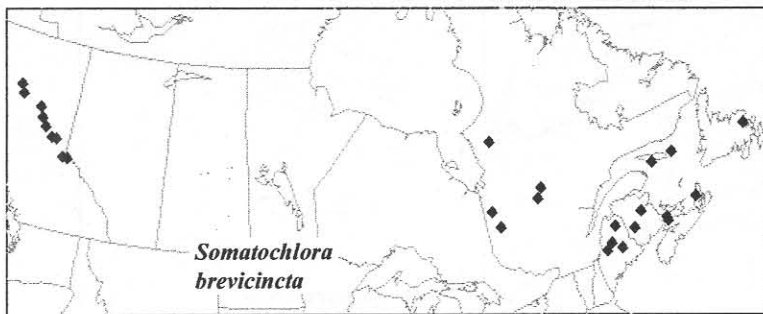


CORDULIIDAE 4

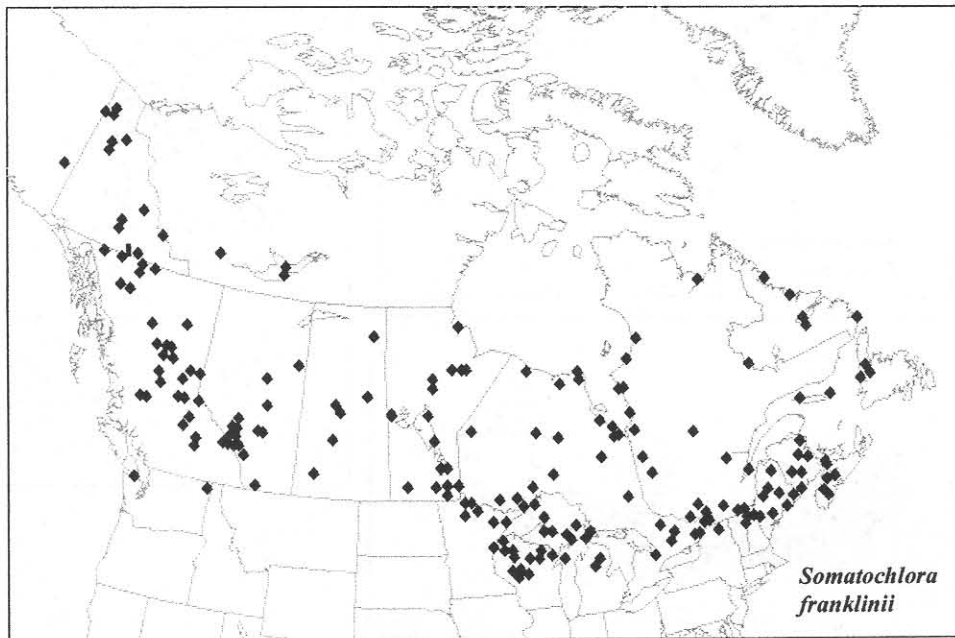
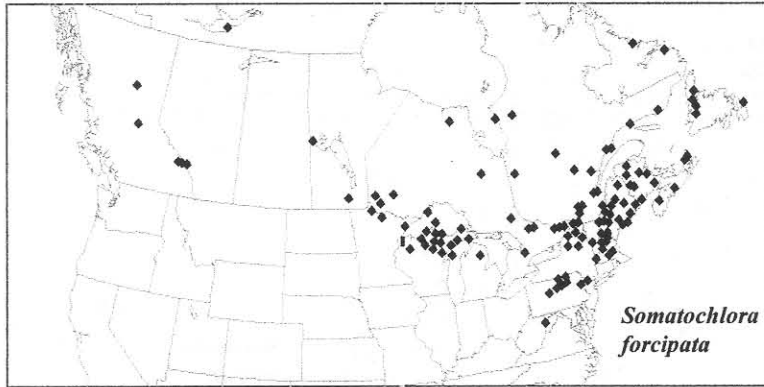
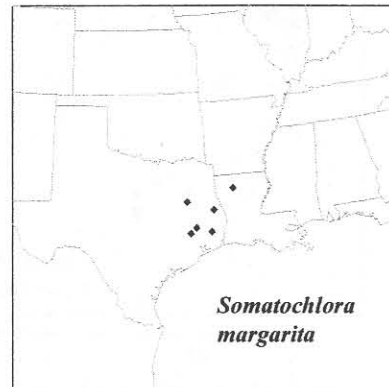
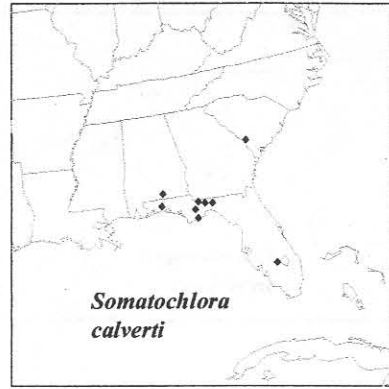
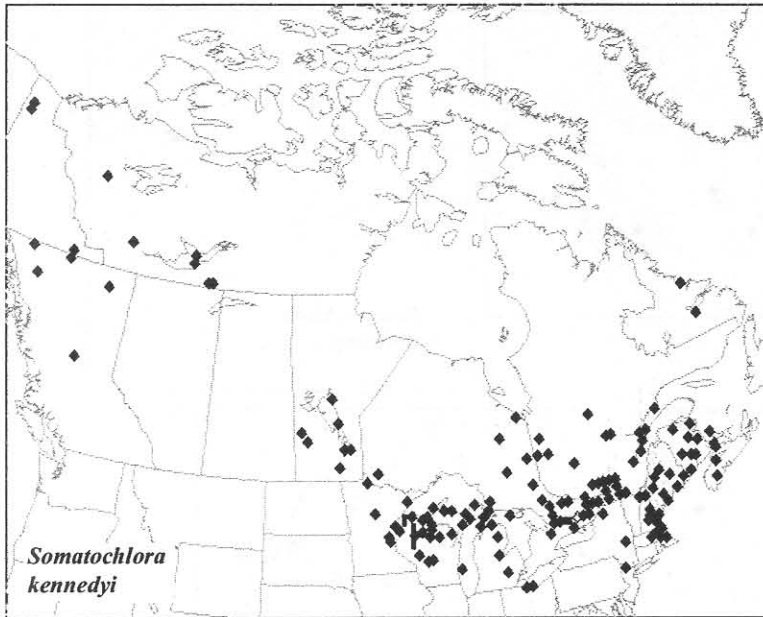
- Helocordulia uhleri*
Neurocordulia yamaskanensis, molesta, obsoleta
Williamsonia fletcheri, lintneri
Somatochlora hineana



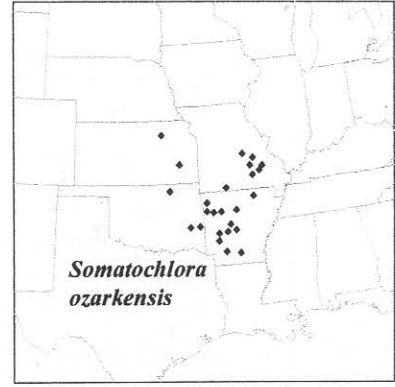
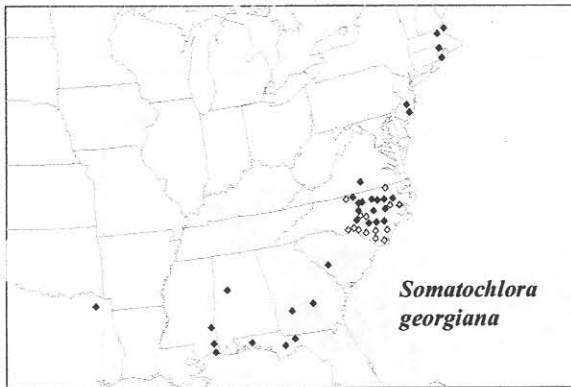
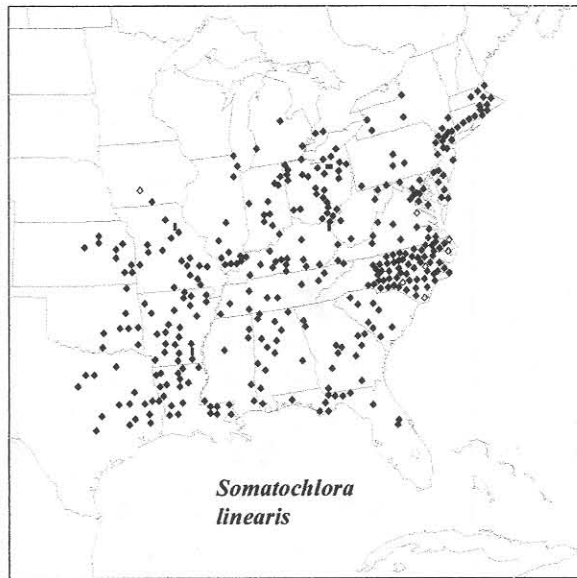
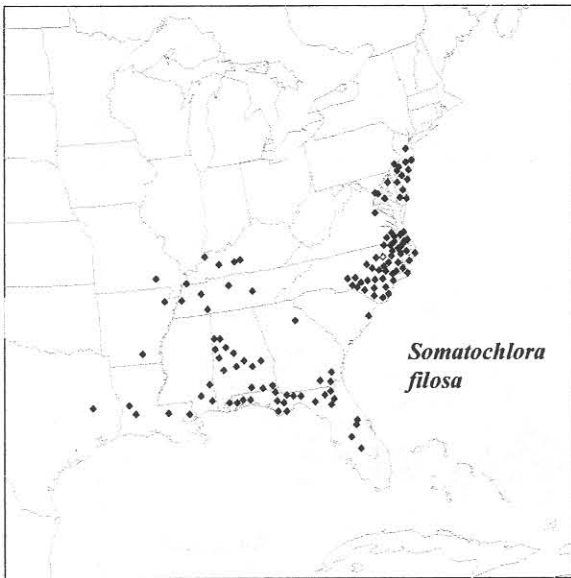
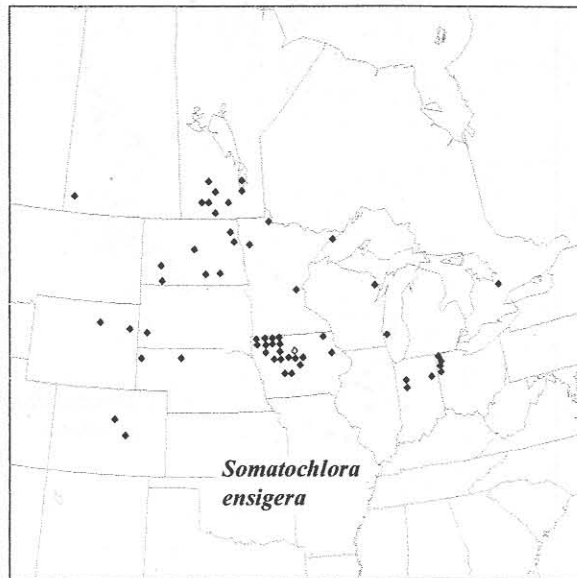
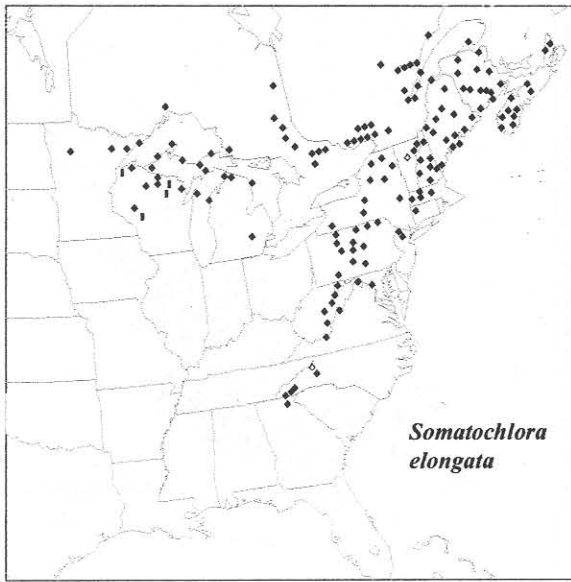
CORDULIIDAE 5 *Somatochlora albicincta, cingulata, whitehousei*



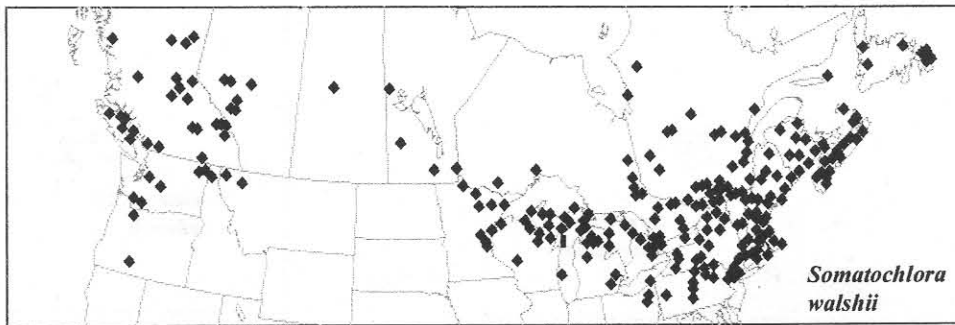
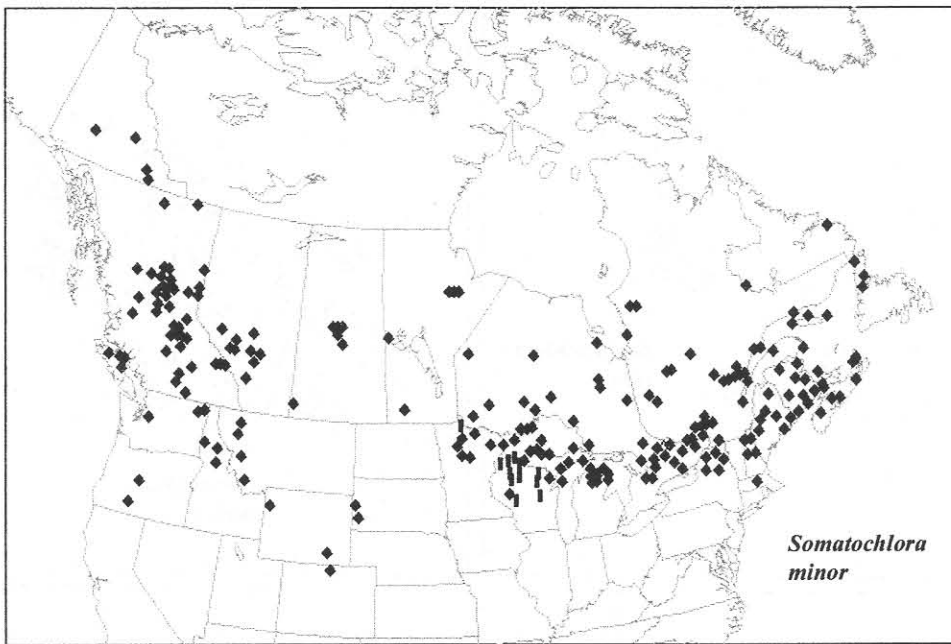
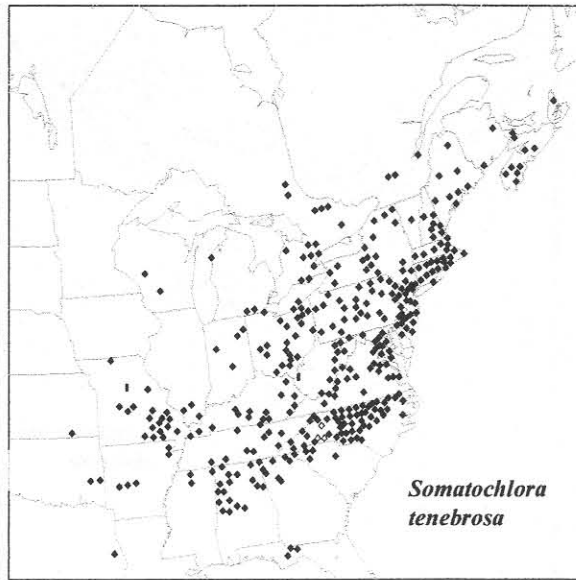
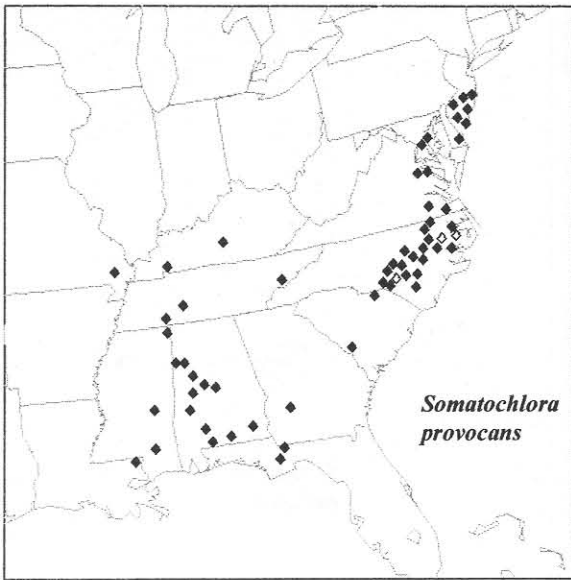
CORDULIIDAE 6 *Somatochlora brevicincta, sahlbergi, septentrionalis, hudsonica, semicircularis, williamsoni*



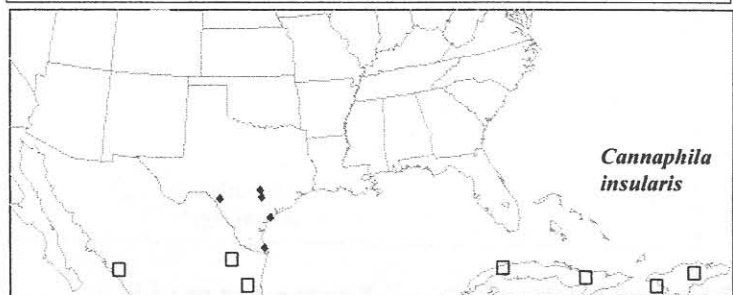
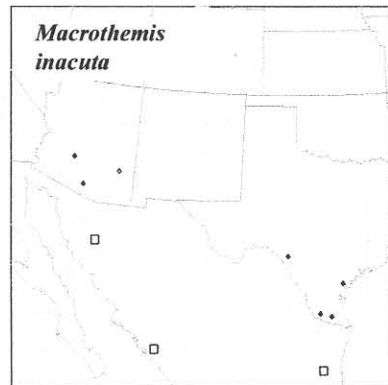
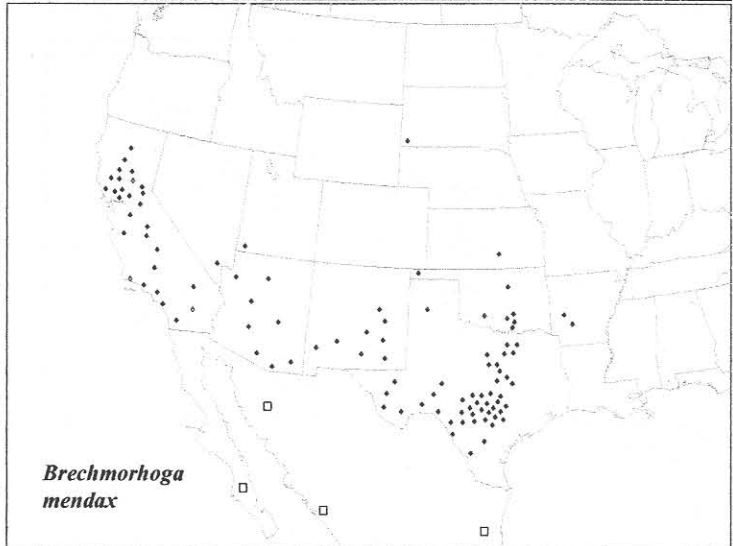
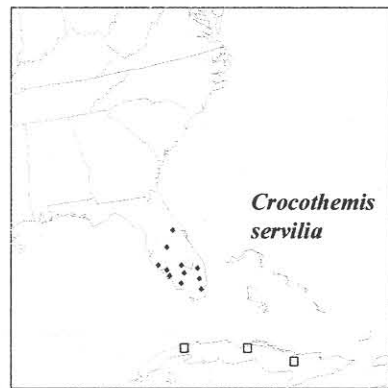
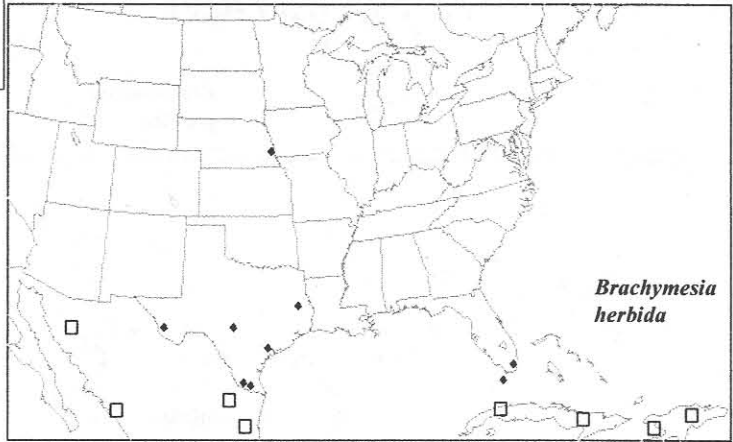
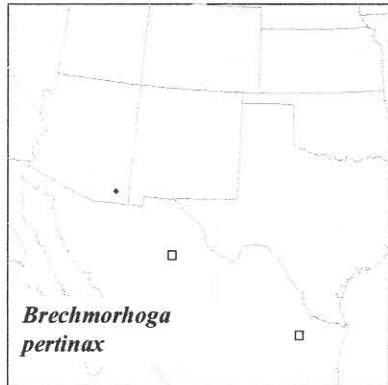
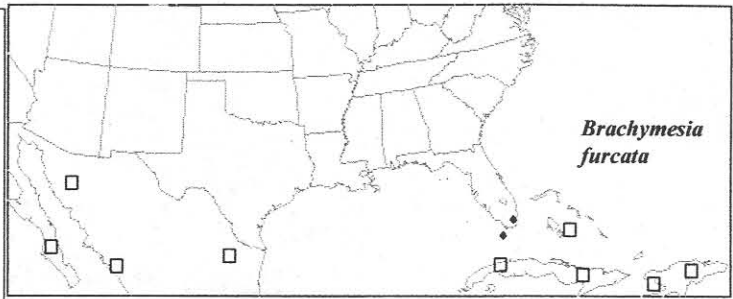
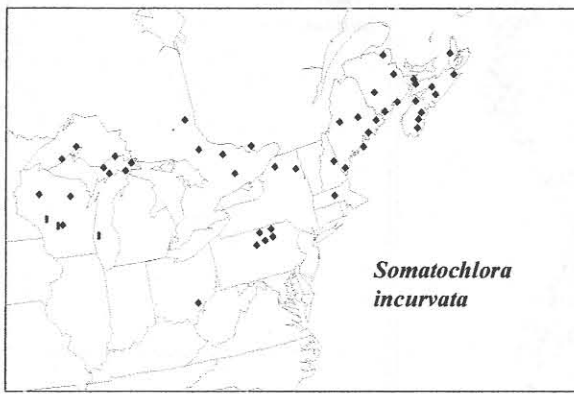
CORDULIIDAE 7 *Somatochlora kennedyi, calverti, margarita, forcipata, franklinii*



CORDULIIDAE 8 *Somatochlora elongata, ensigera, filosa, linearis, georgiana, ozarkensis*

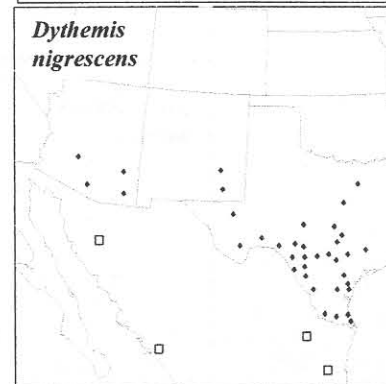
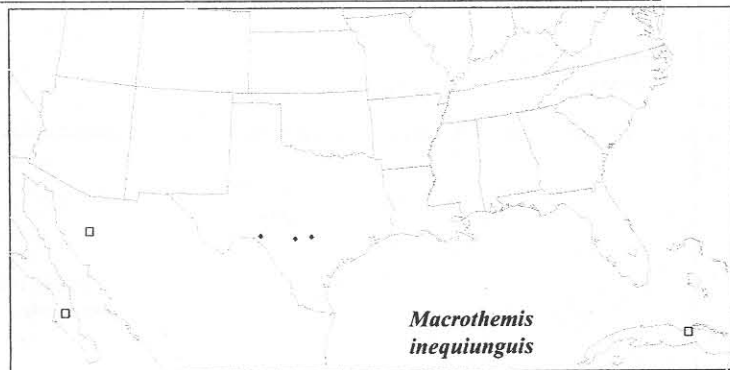
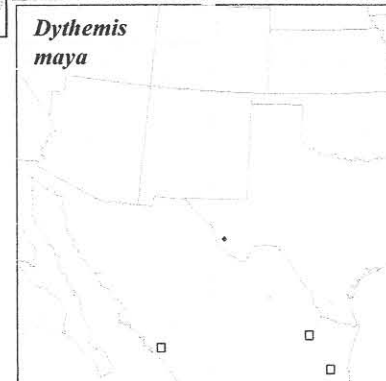
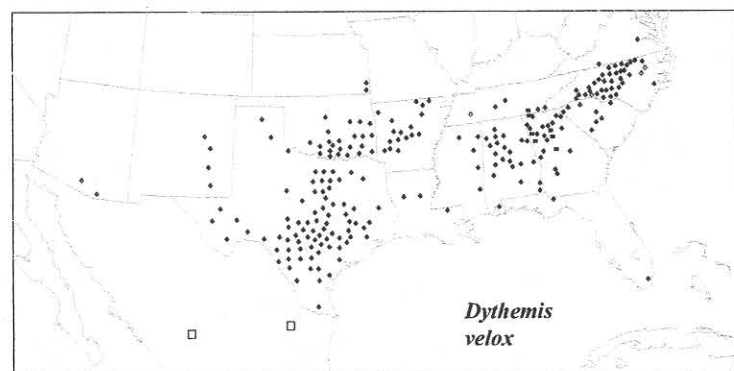
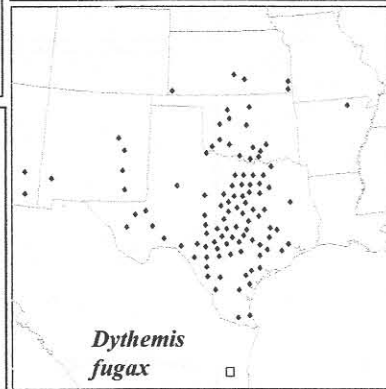
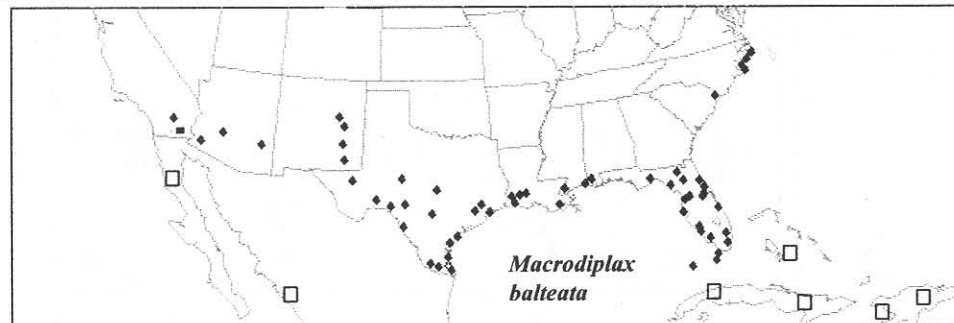
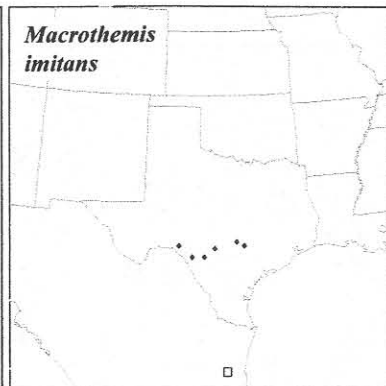
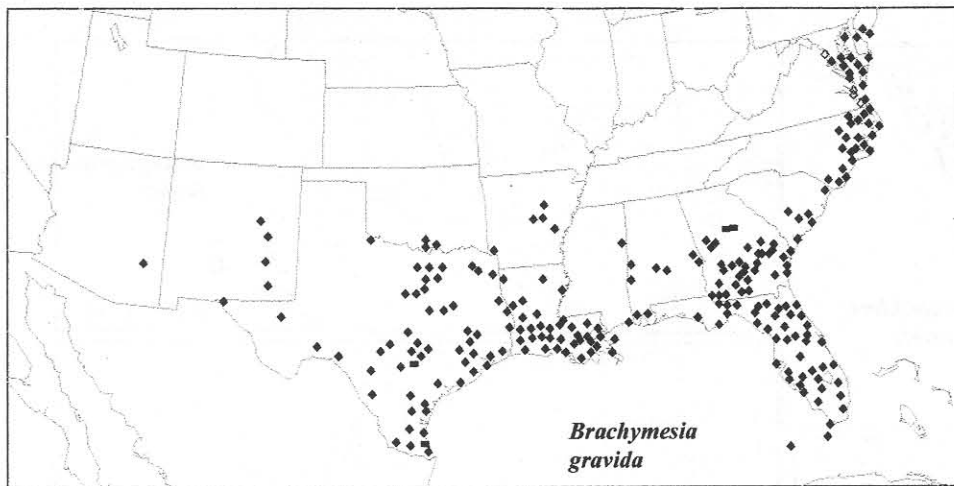


CORDULIIDAE 9 *Somatochlora provocans, tenebrosa, minor, walshii*



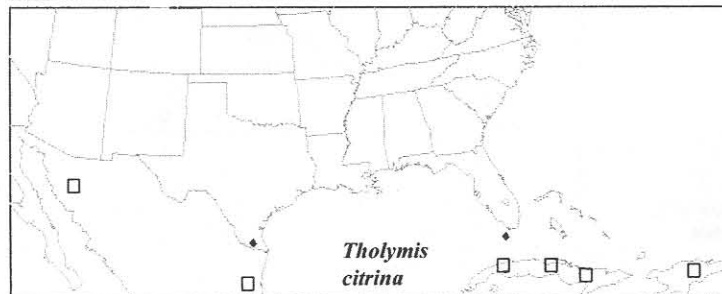
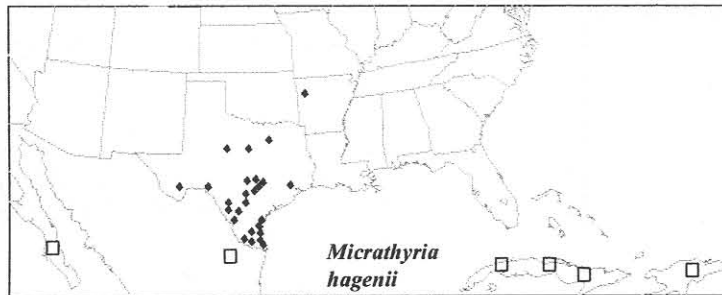
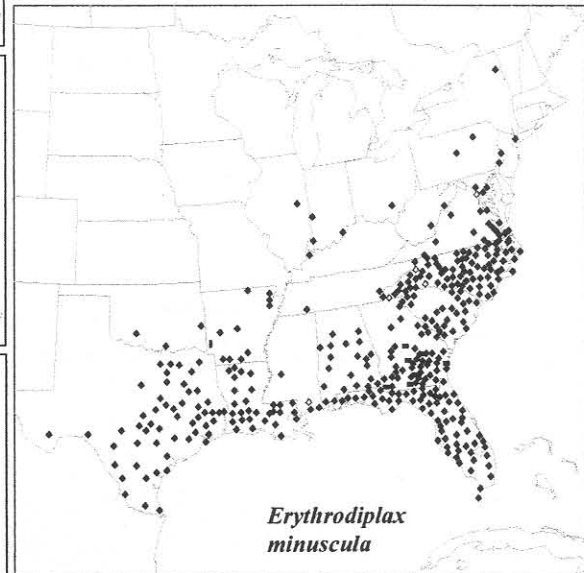
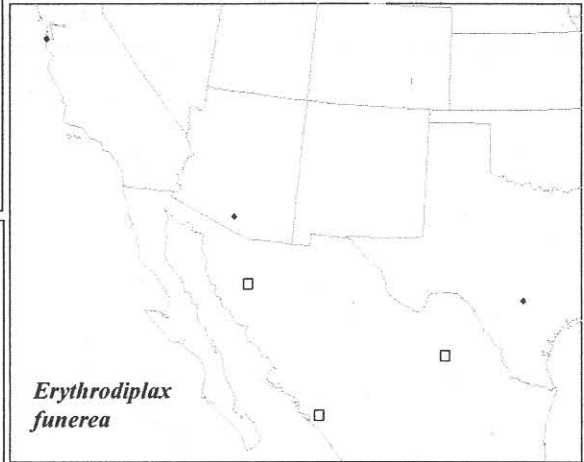
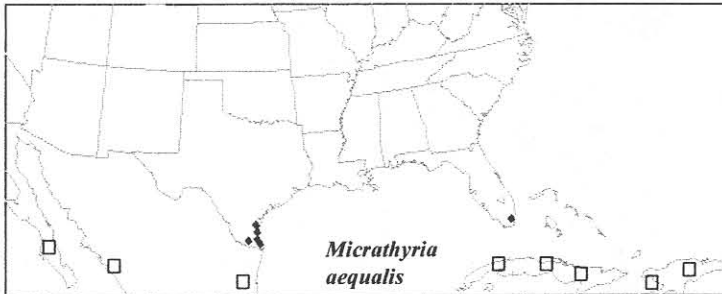
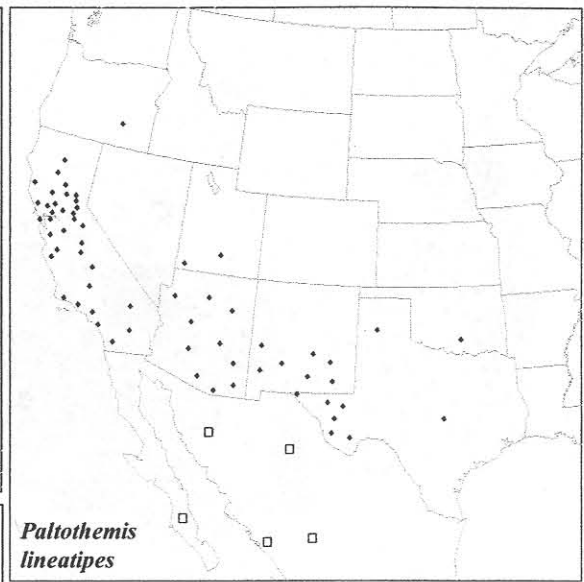
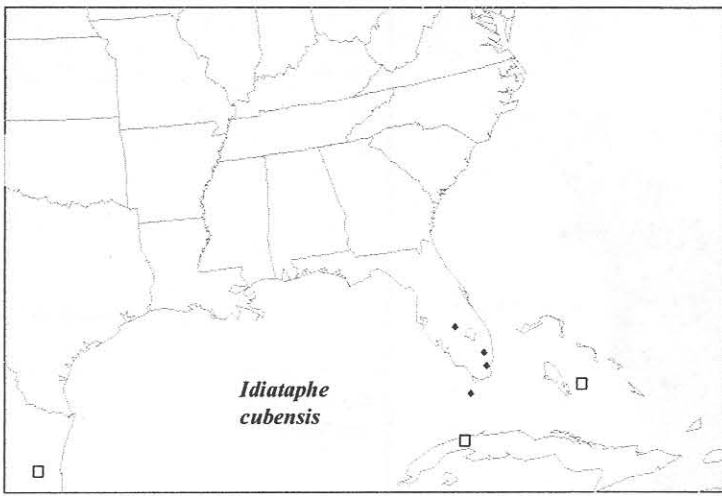
CORDULIIDAE 10; LIBELLULIDAE 1

- Somatochlora incurvata*
- Brachymesia furcata, herbida*
- Brechmorhoga mendax, pertinax*
- Macrothemis inacuta*
- Cannaphila insularis*



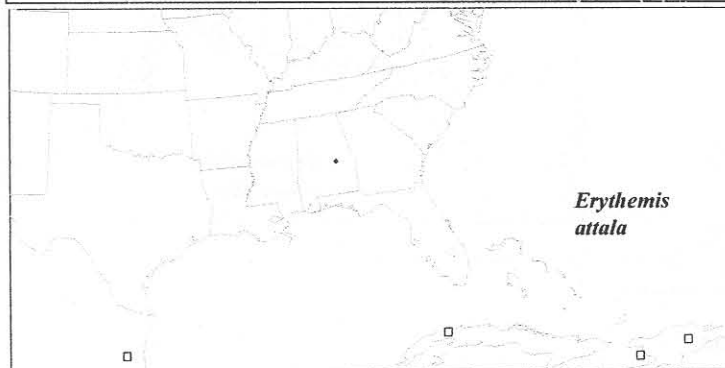
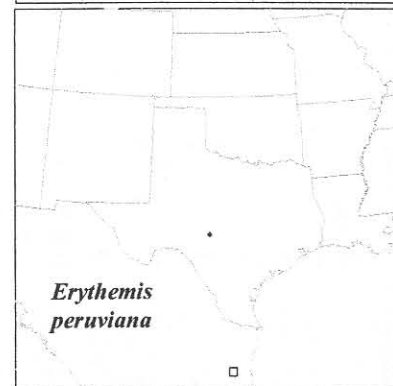
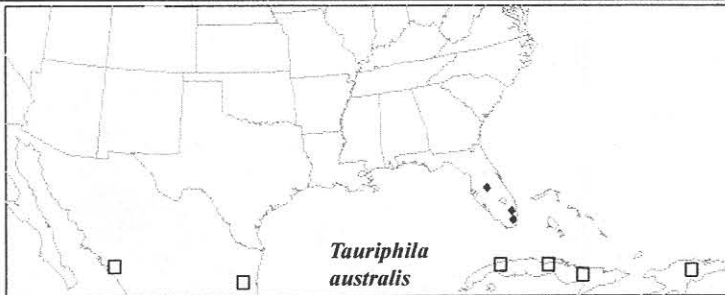
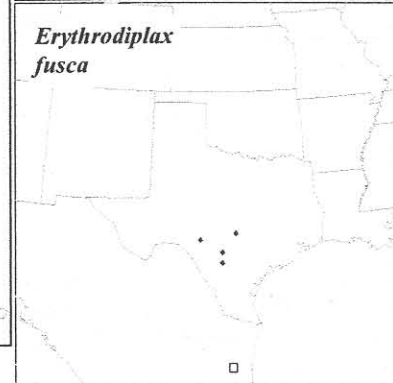
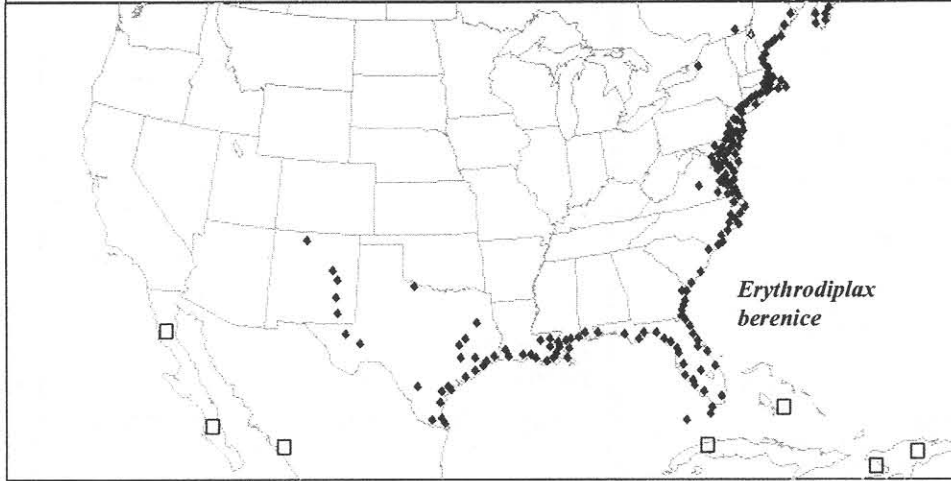
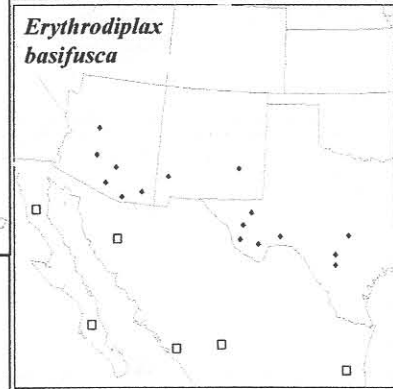
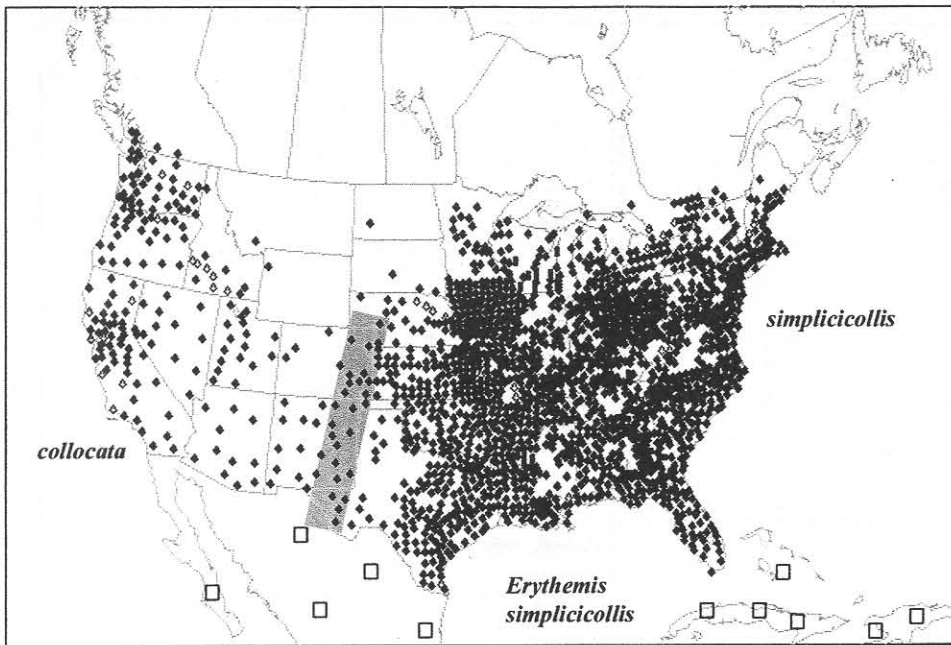
LIBELLULIDAE 2

- Brachymesia gravida*
- Macrothemis imitans, inequiunguis*
- Macrodiplax balteata*
- Dythemis fugax, maya, nigrescens, velox*



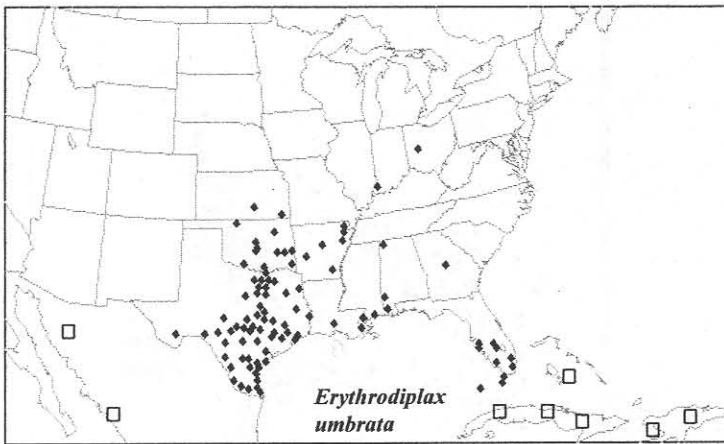
LIBELLULIDAE 3

- Idiataphe cubensis*
Paltothermis lineatipes
Micrathyria aequalis, didyma, hagenii
Erythrodiplax funerea, minuscula
Tholymis citrina

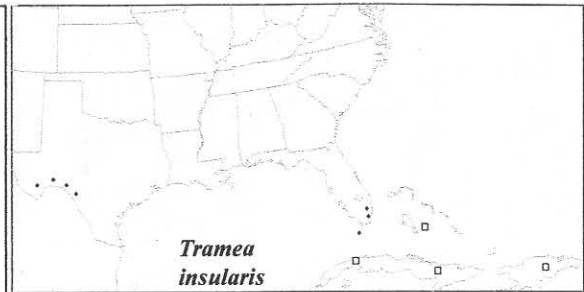


LIBELLULIDAE 4

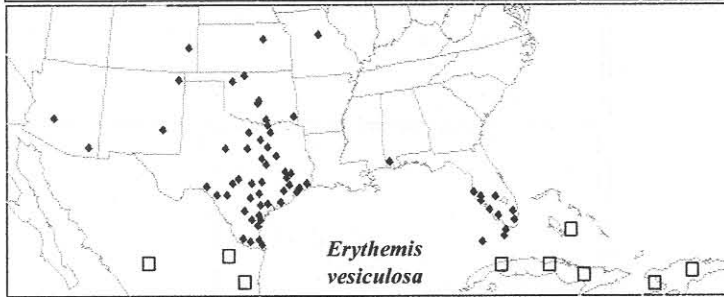
Erythemis simplicicollis, attala, peruviana
Erythrodiplax basifusca, fusca
Tauriphila australis, azteca



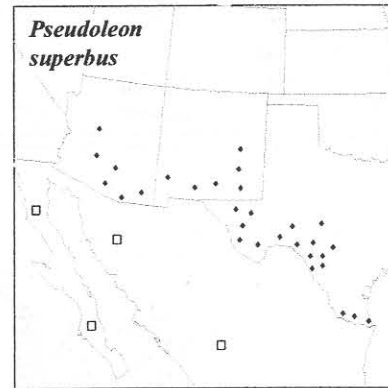
Erythrodiplax umbrata



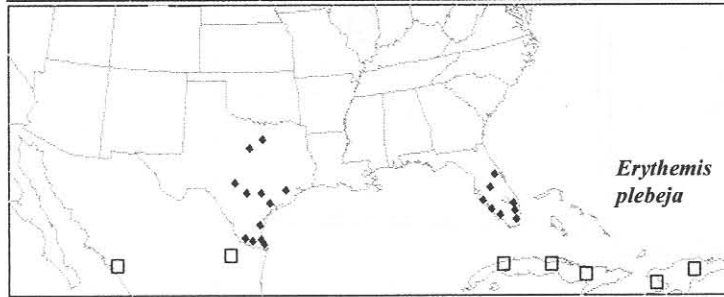
Tramea insularis



Erythemis vesiculosa



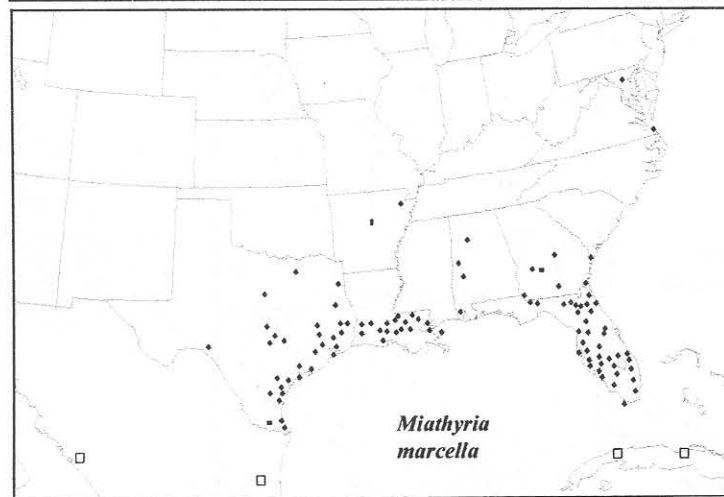
Pseudoleon superbus



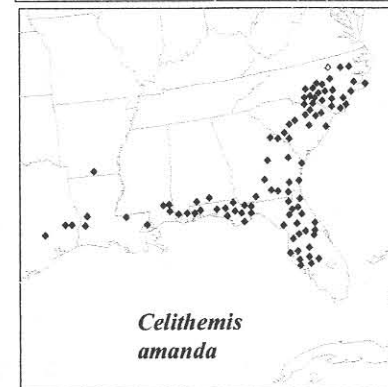
Erythemis plebeja



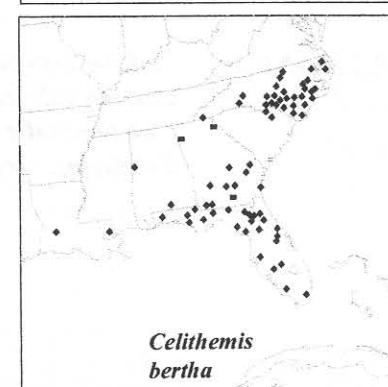
Tramea binotata



Miathyria marcella

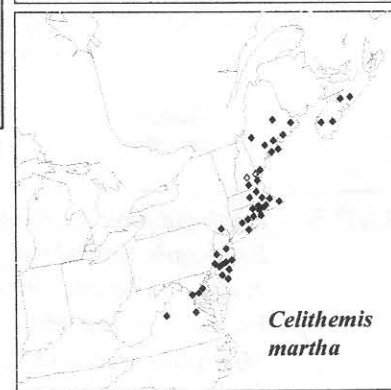
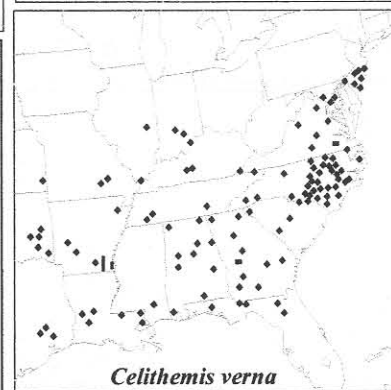
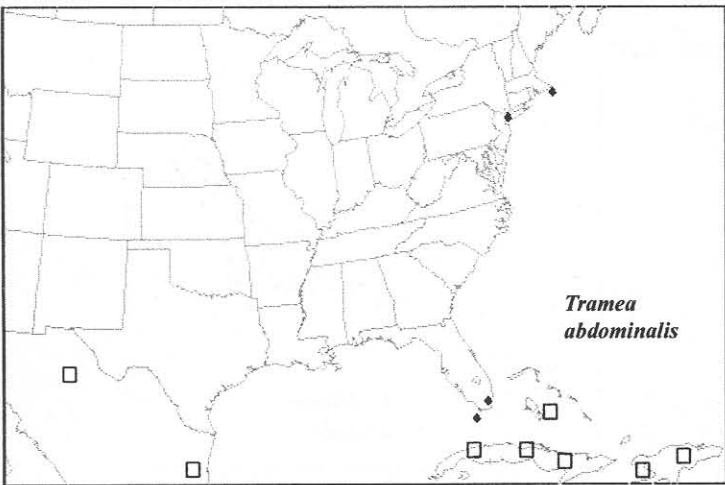
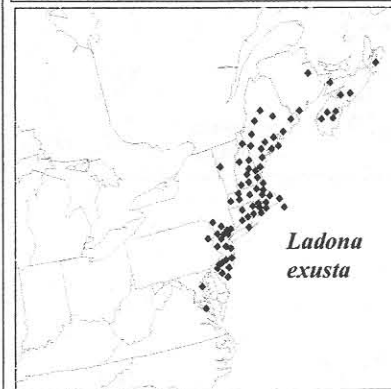
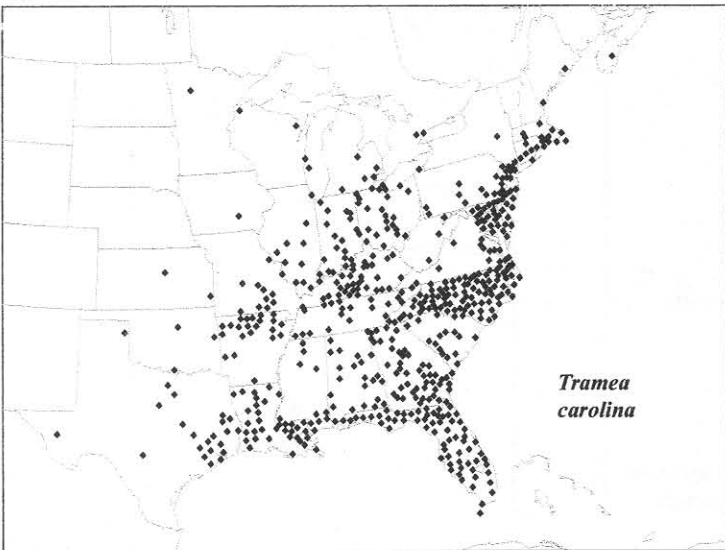
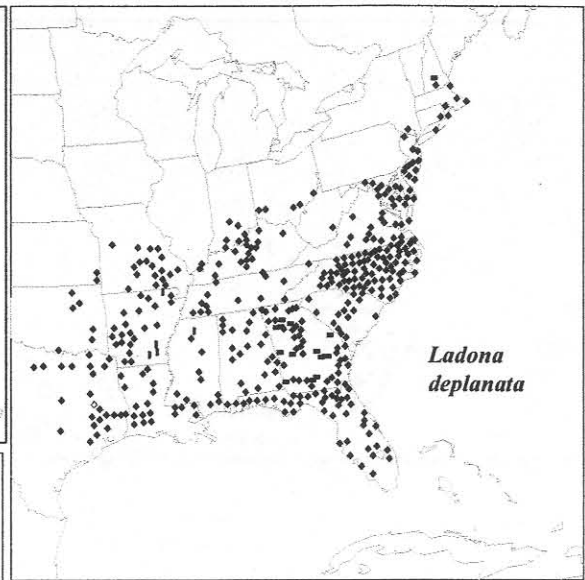
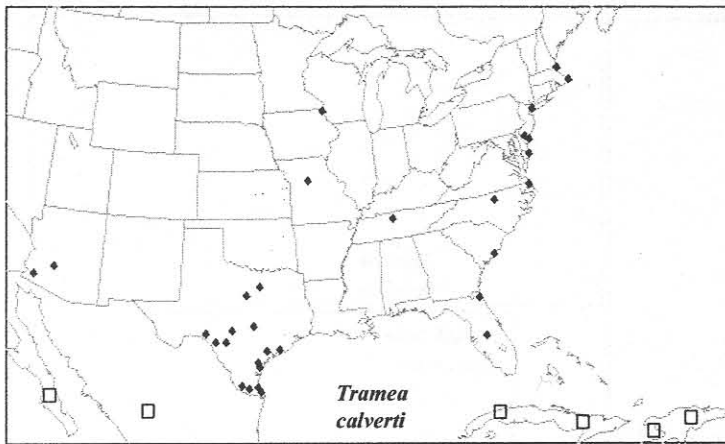


Celithemis amanda



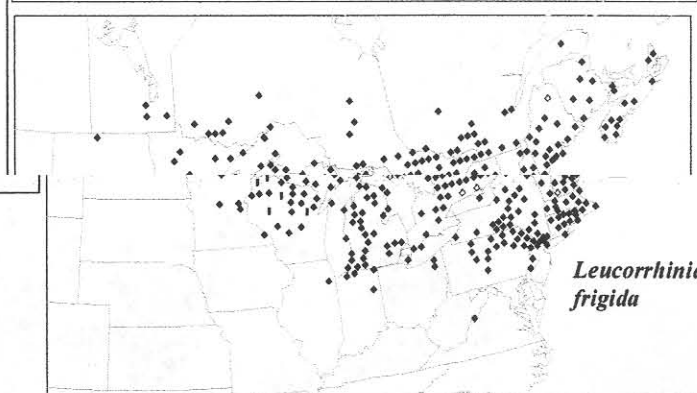
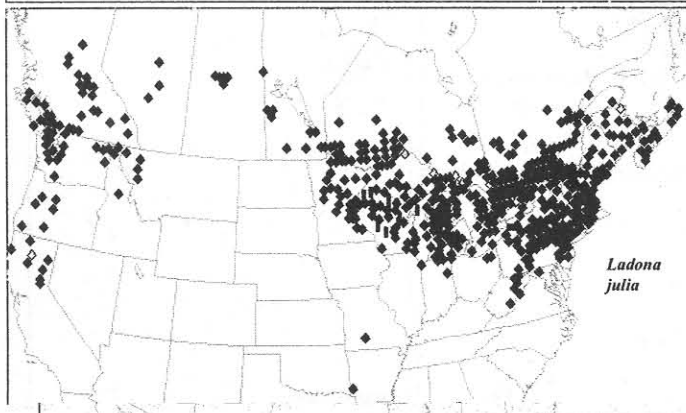
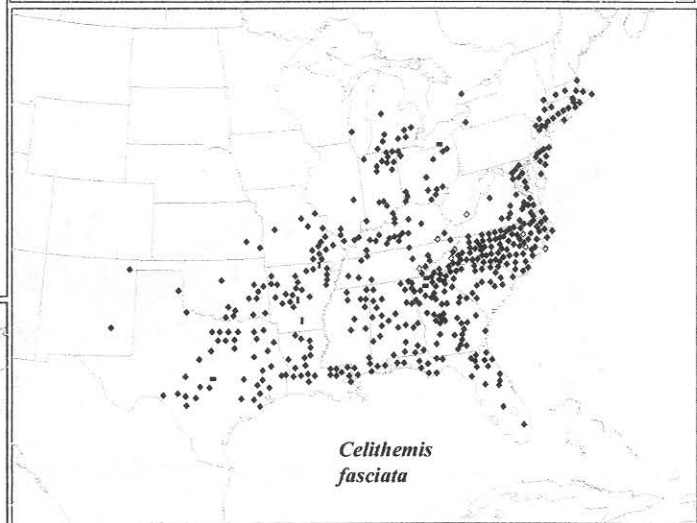
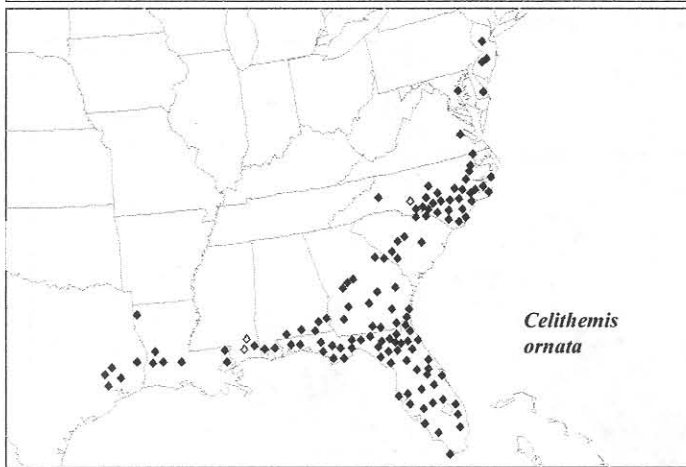
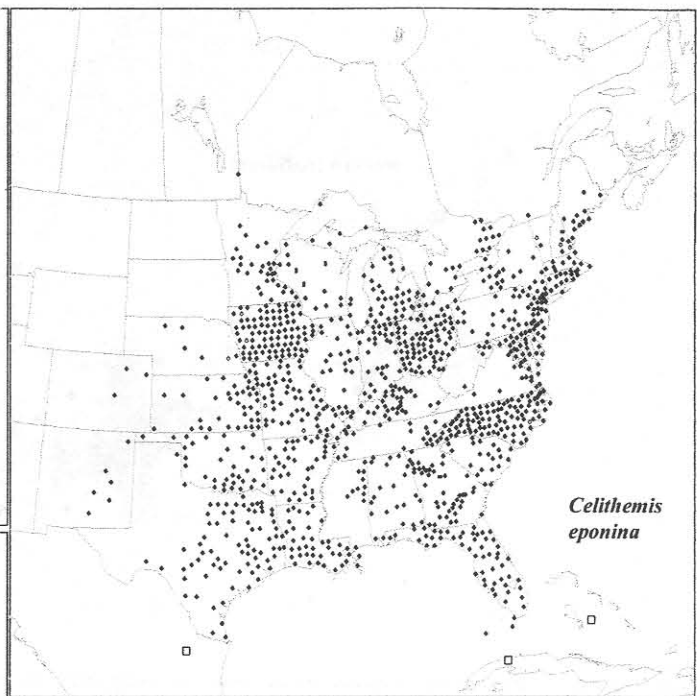
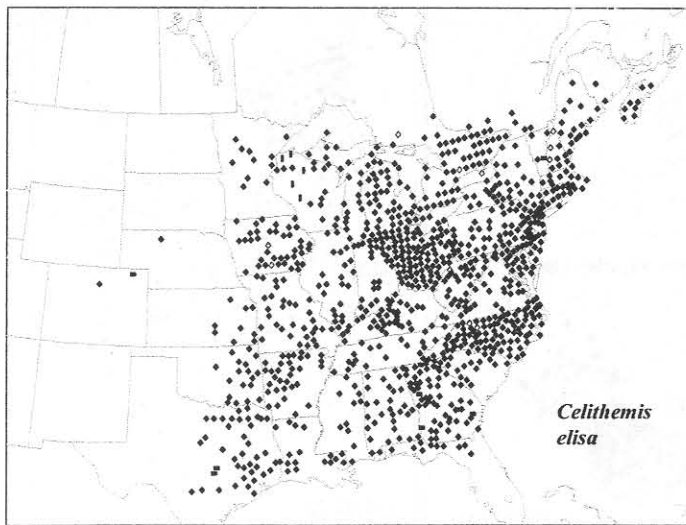
Celithemis bertha

LIBELLULIDAE 5 *Erythrodiplax umbrata*
Erythemis vesiculosa, plebeja
Tramea insularis, binotata
Pseudoleon superbus
Miathyria marcella
Celithemis amanda, bertha



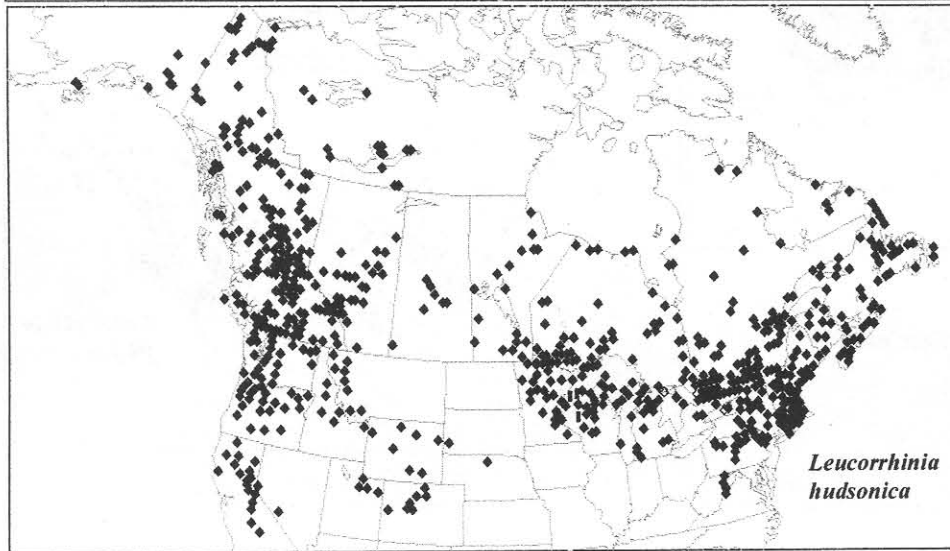
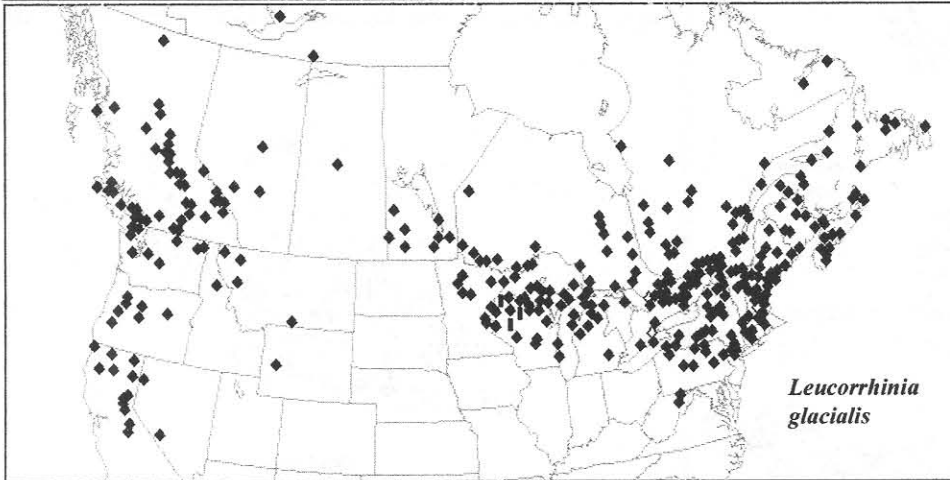
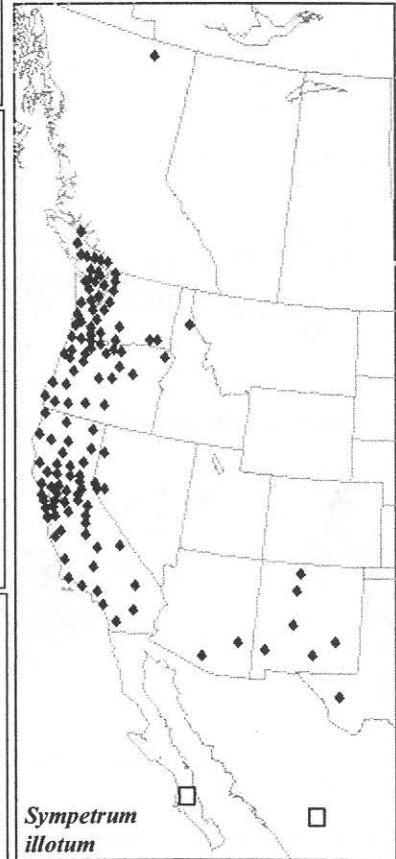
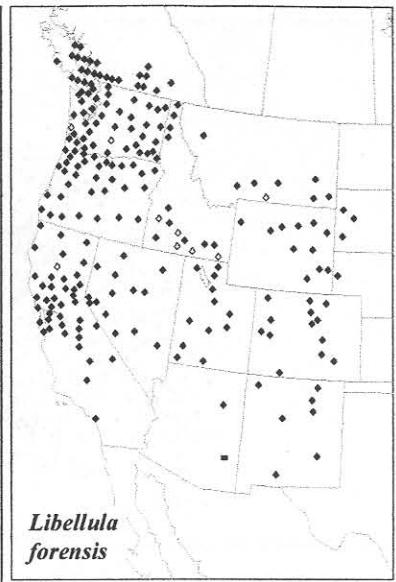
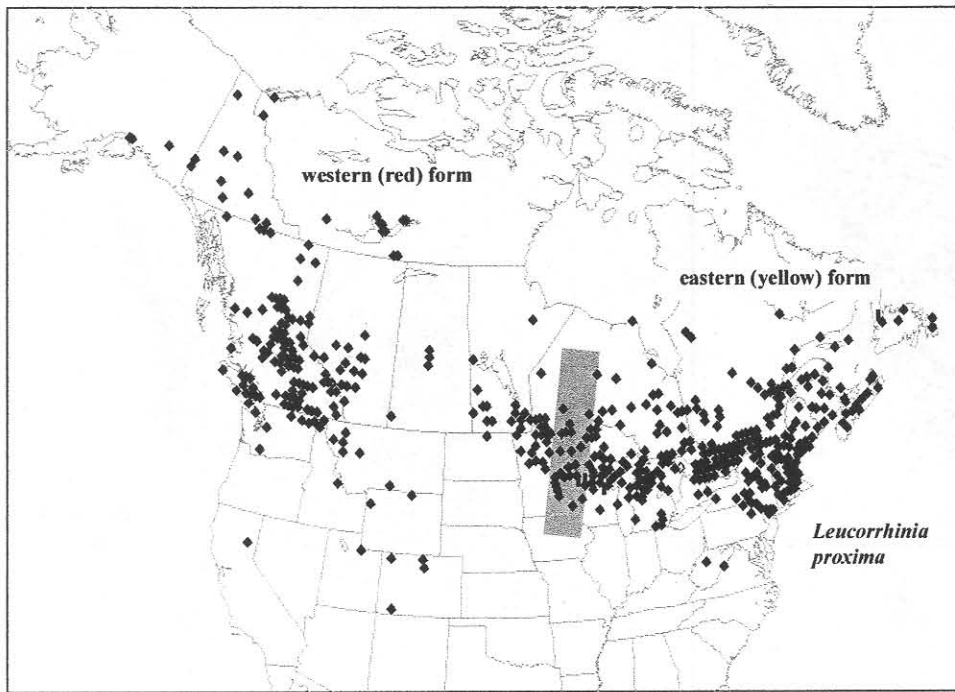
LIBELLULIDAE 6

Ladona deplanata, exusta
Tramea calverti, carolina,
abdominalis
Celithemis verna, martha



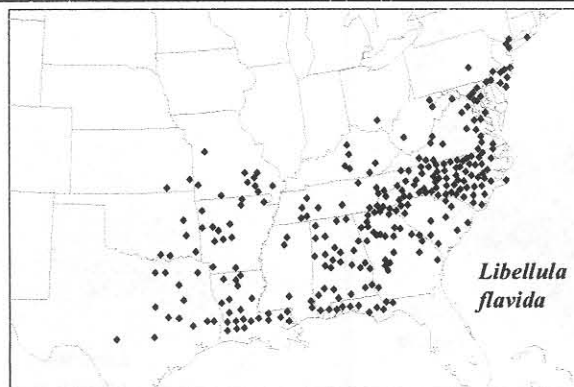
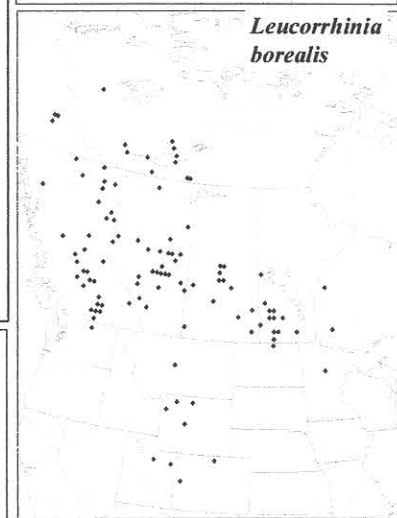
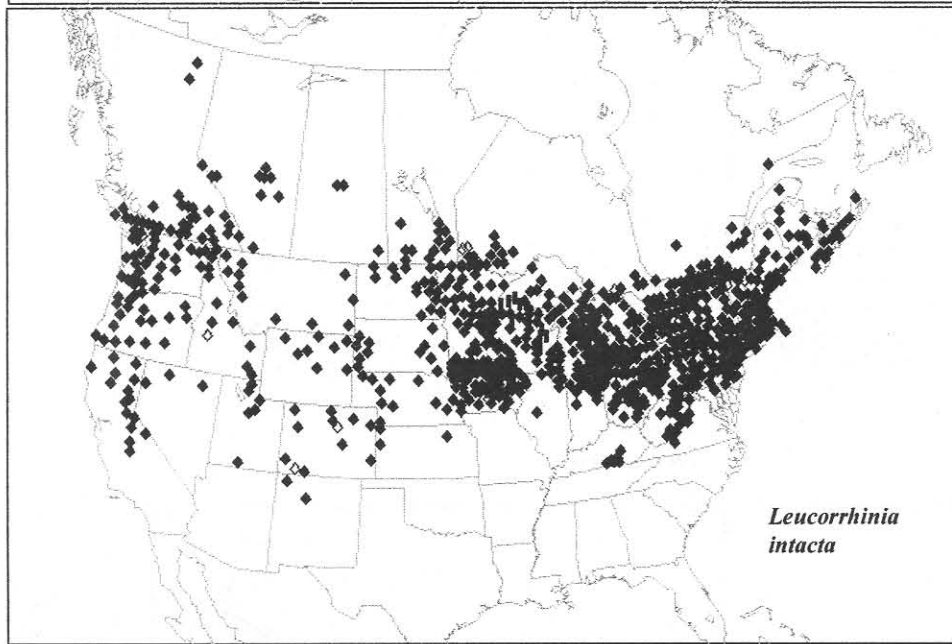
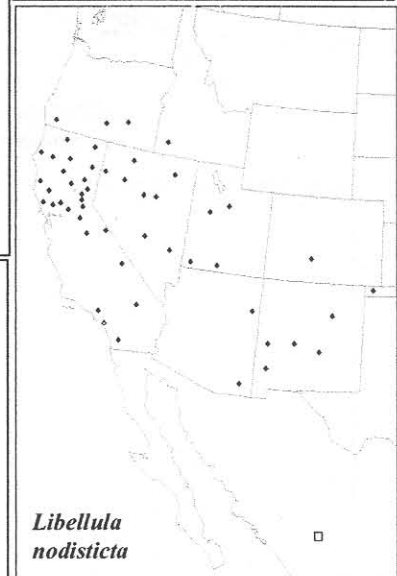
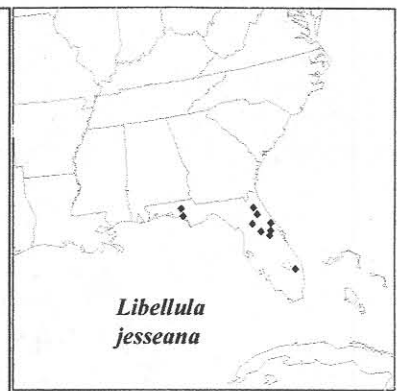
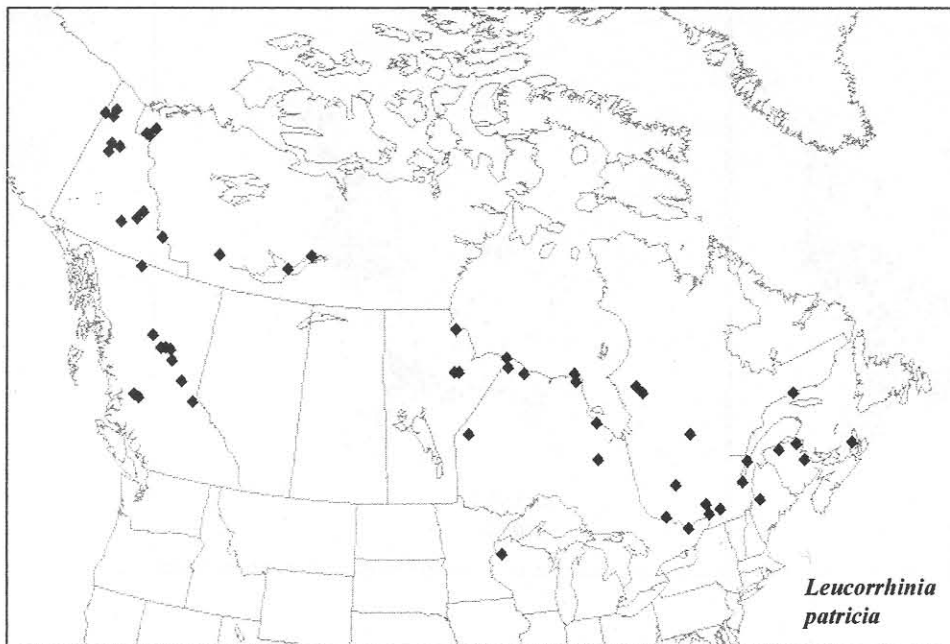
LIBELLULIDAE 7

- Celithemis elisa, ornata, eponina, fasciata*
Celithemis ornata
Leucorrhinia frigida



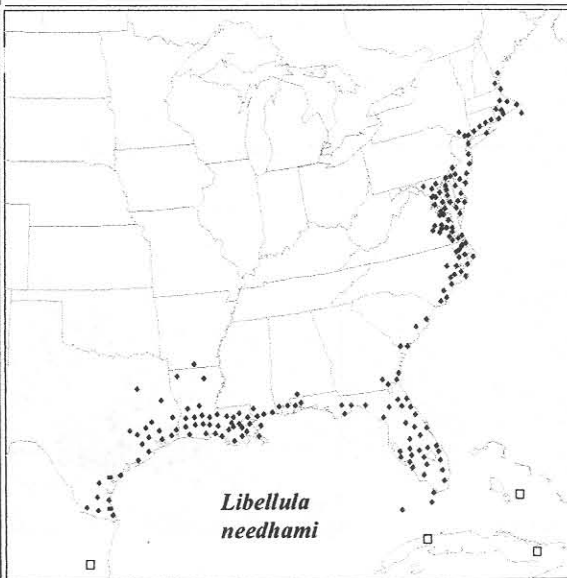
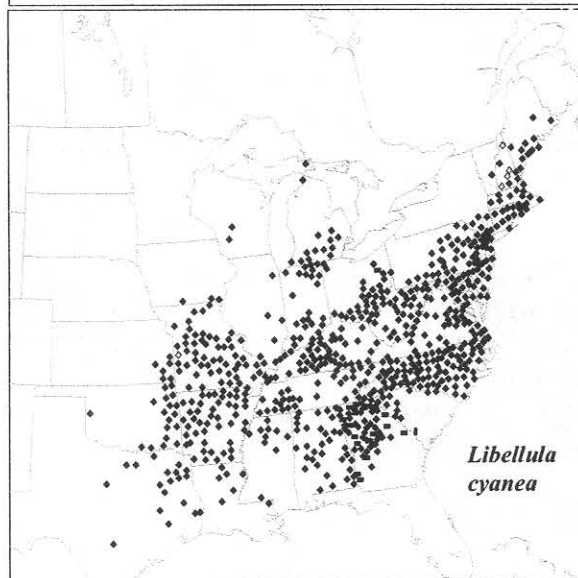
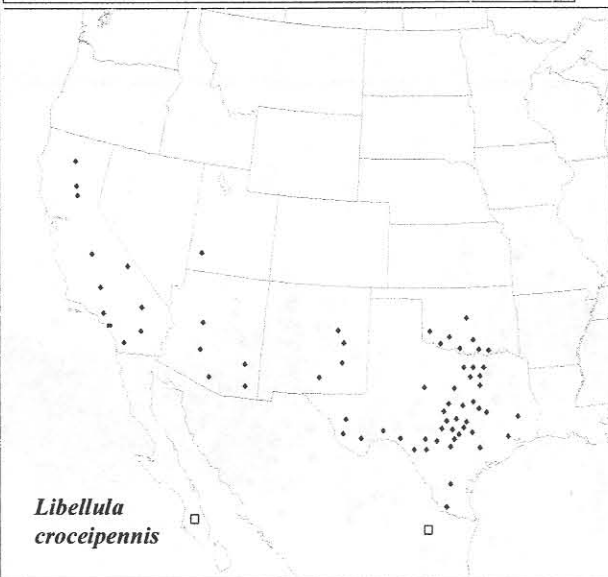
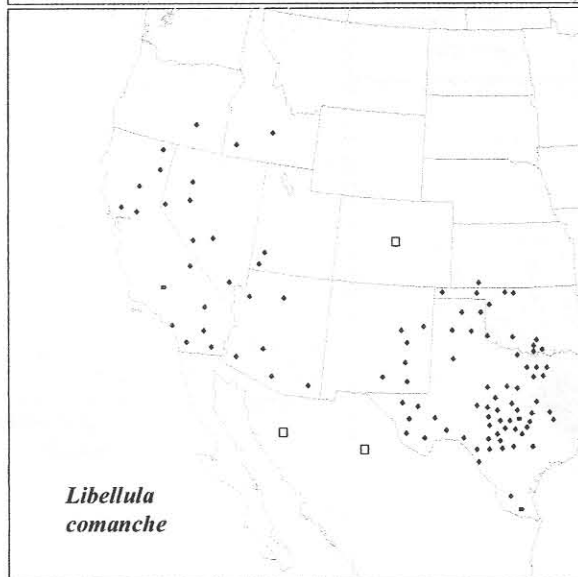
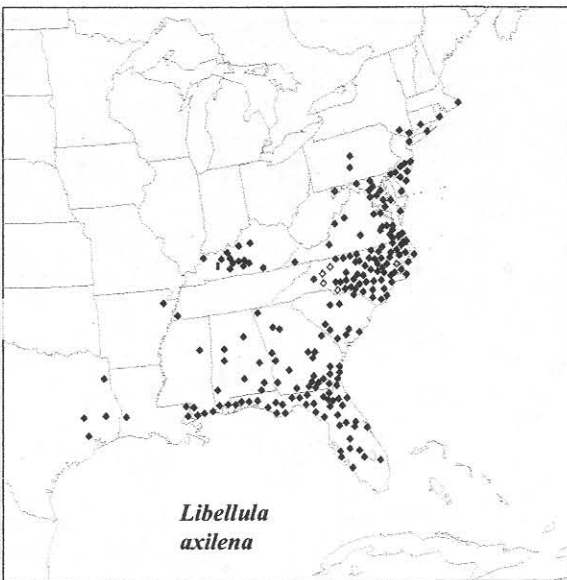
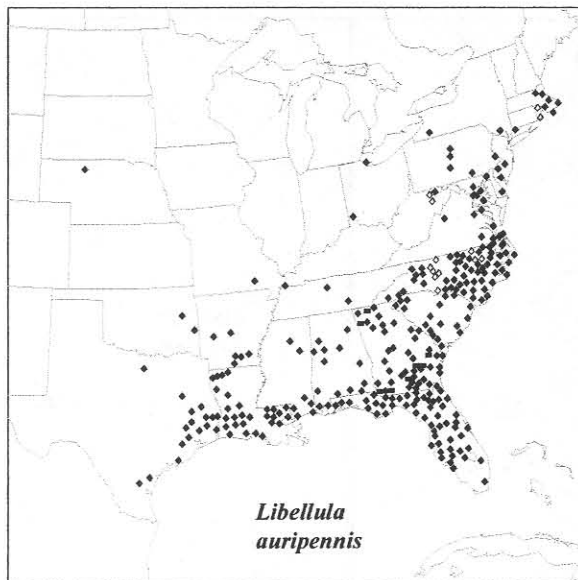
LIBELLULIDAE 8

Leucorrhinia proxima, glacialis, hudsonica
Libellula forensis
Sympetrum illotum

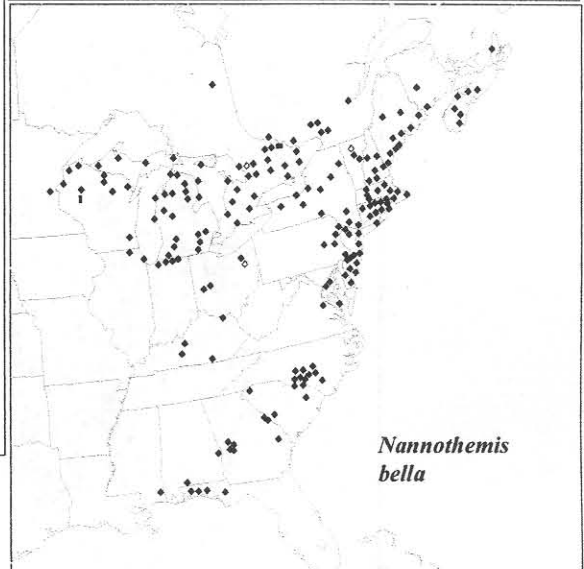
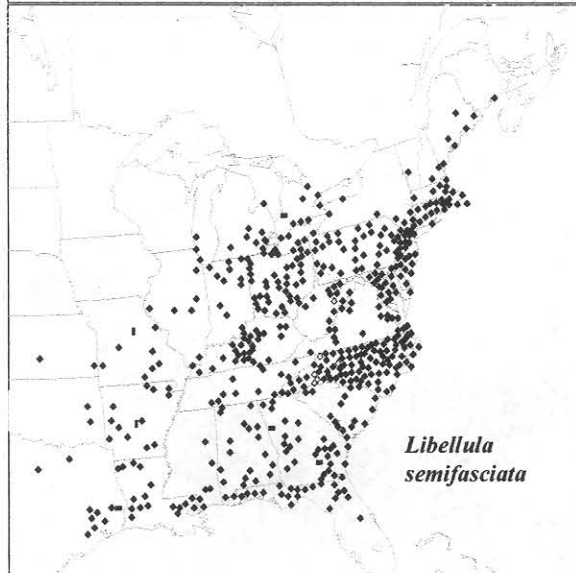
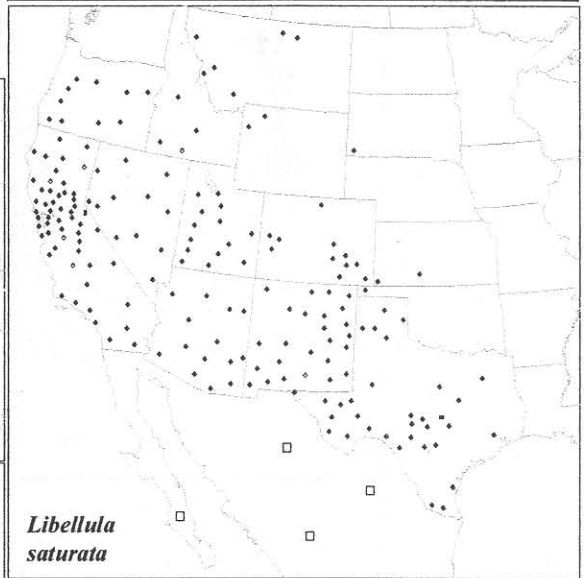
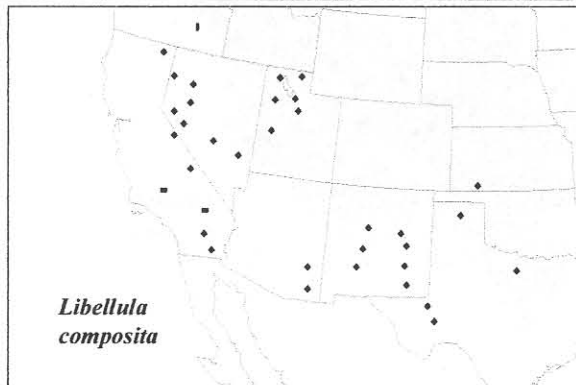
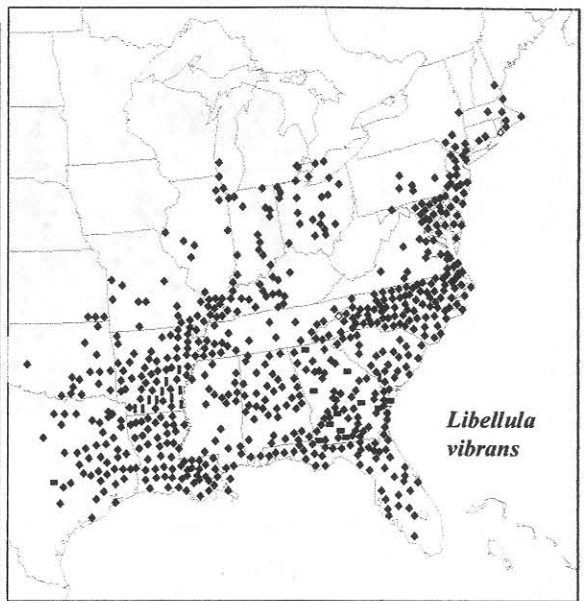
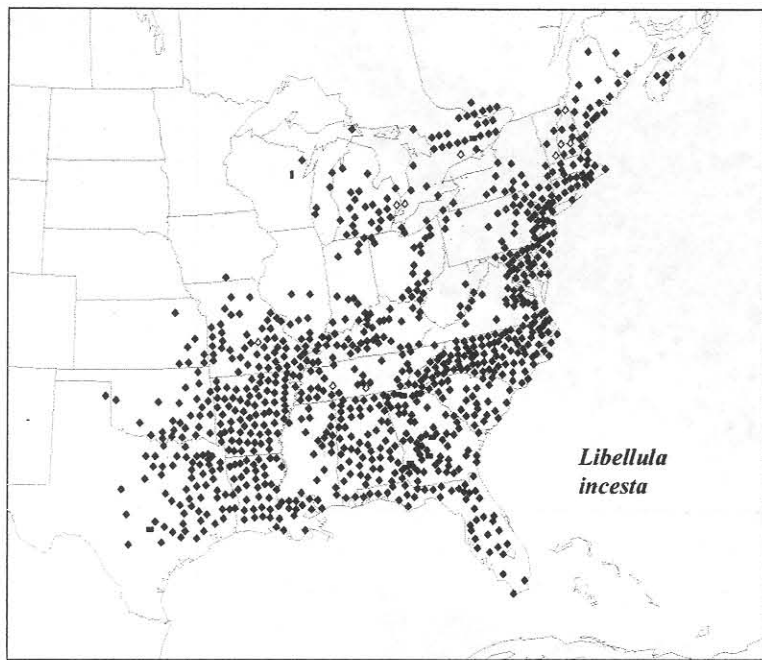


LIBELLULIDAE 9

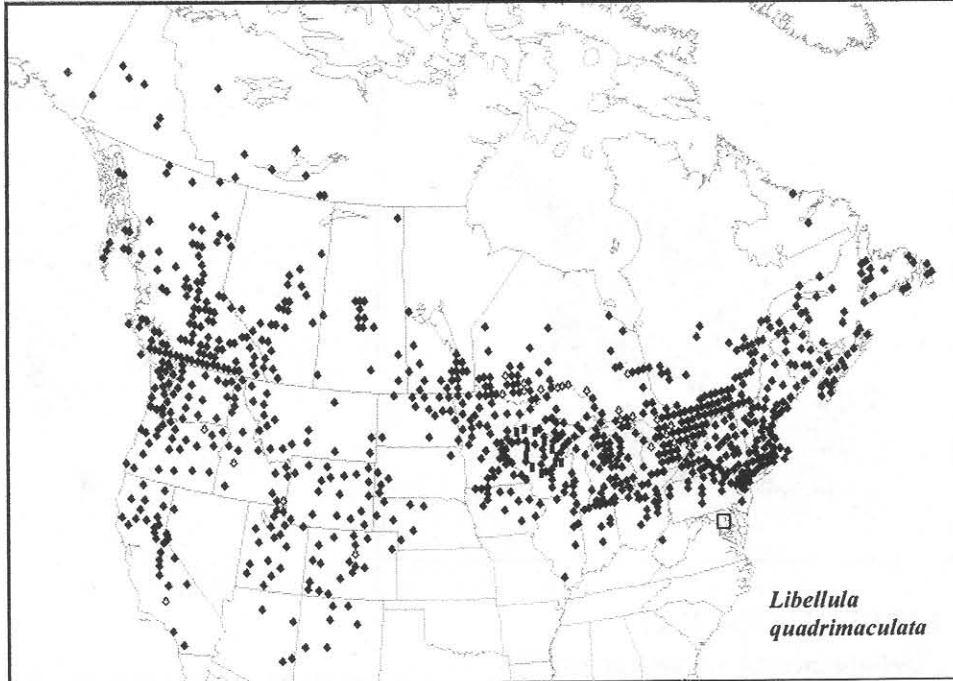
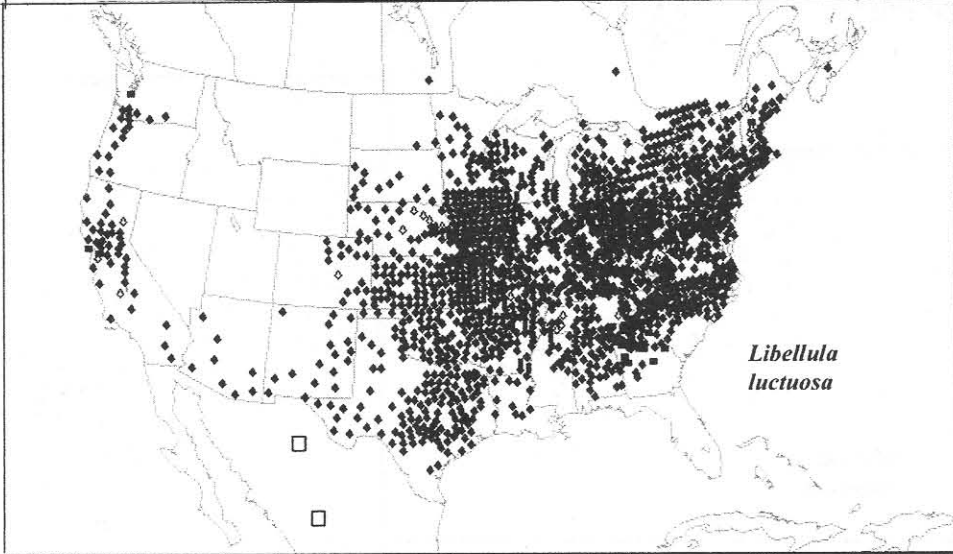
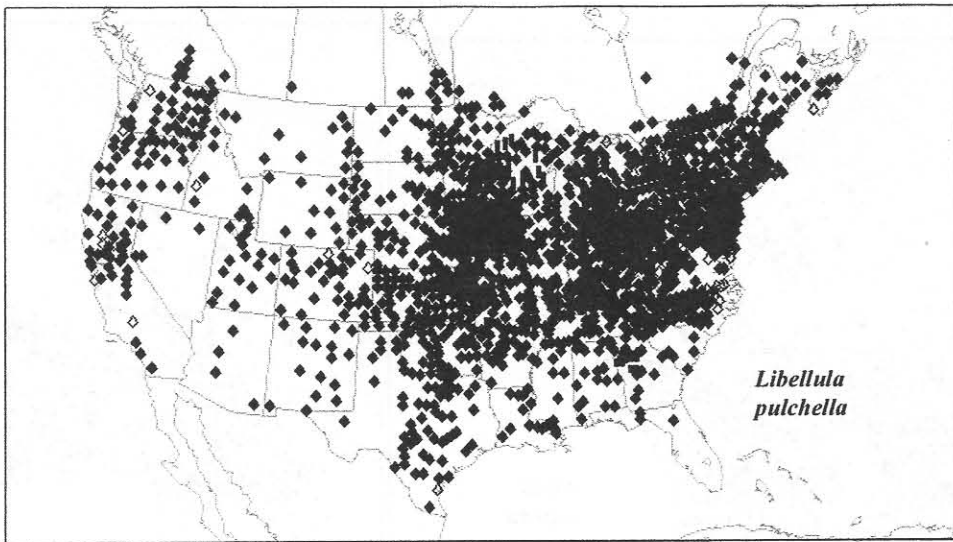
Leucorrhinia patricia, intacta, borealis
Libellula nodisticta, flavida, jesseana



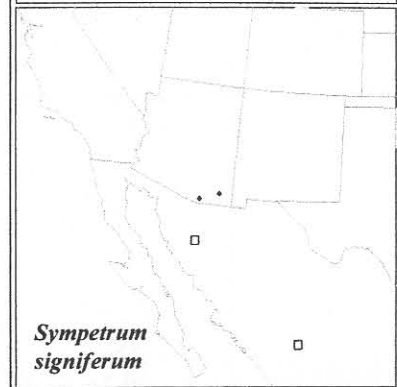
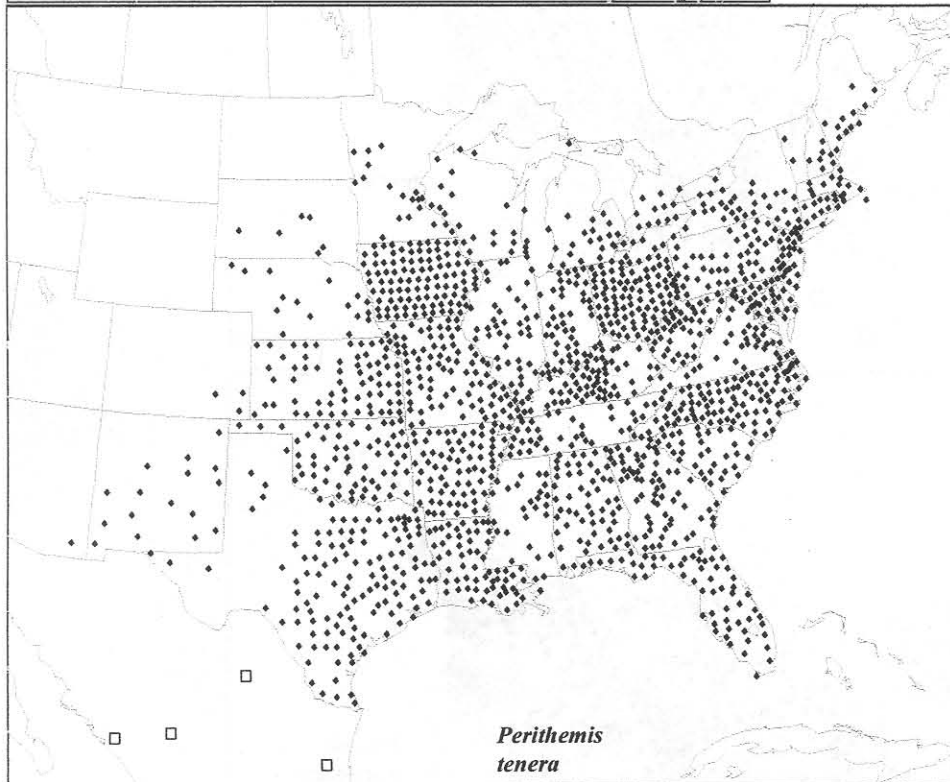
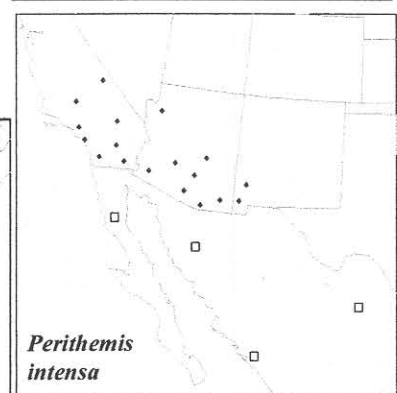
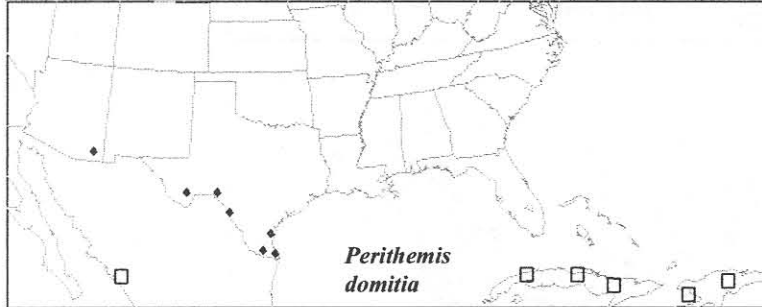
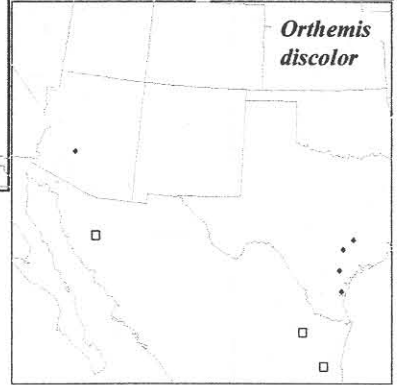
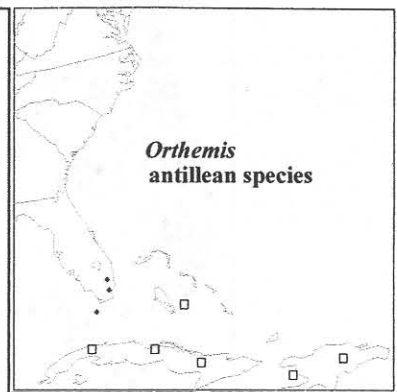
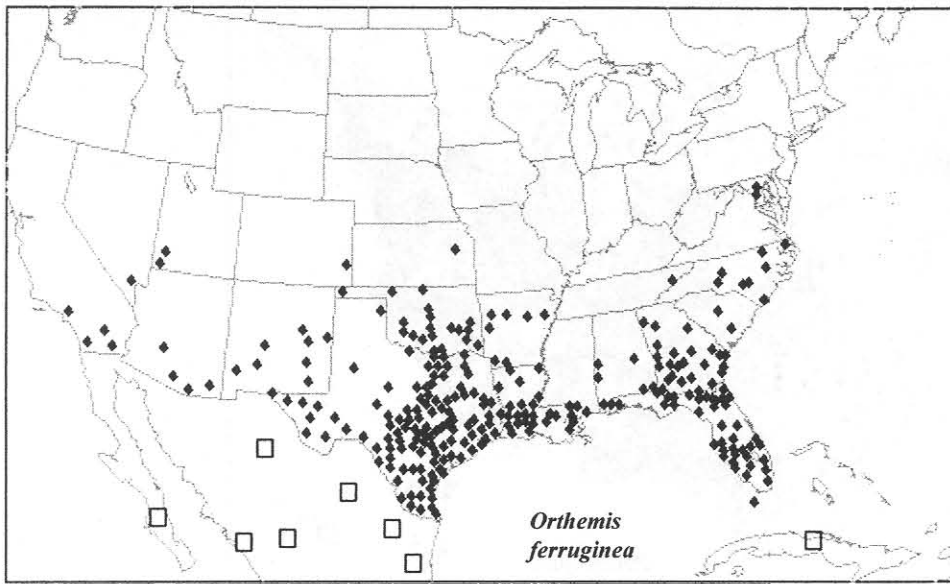
LIBELLULIDAE 10 *Libellula auripennis, axilena, comanche, croceipennis, cyanea, needhami*



LIBELLULIDAE 11
Libellula incesta, vibrans, composita,
saturata, semifasciata
Nannothemis bella

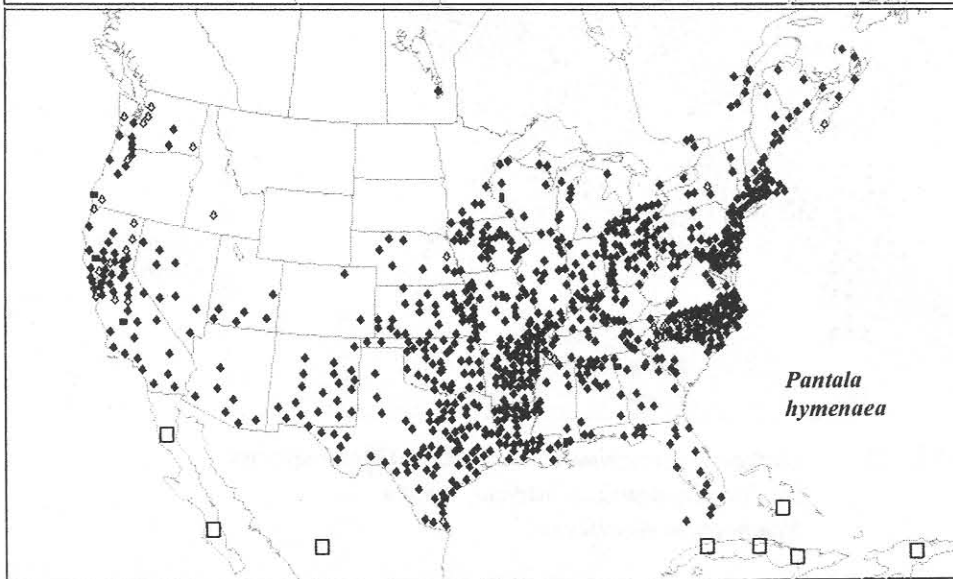
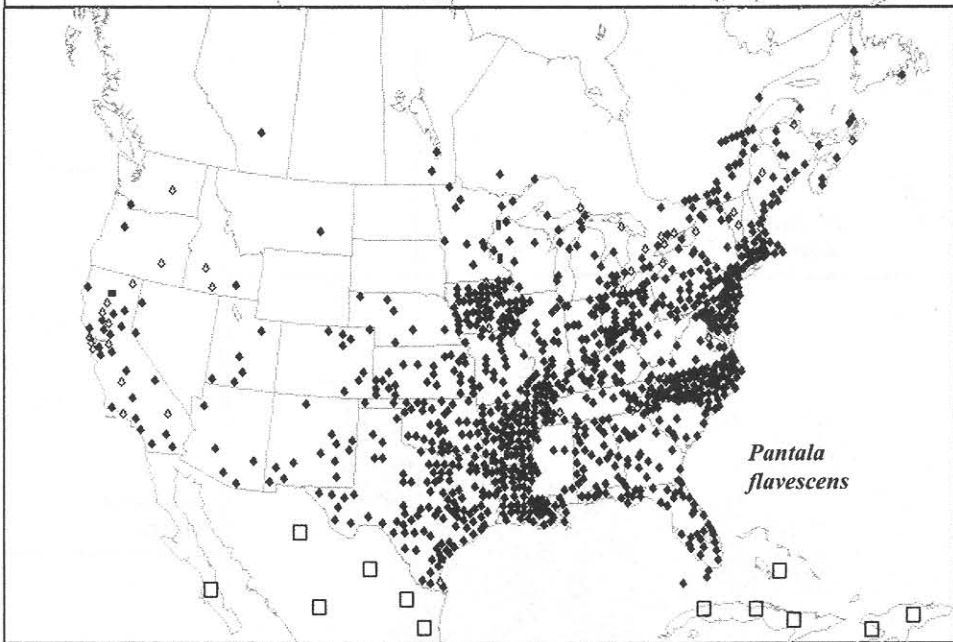
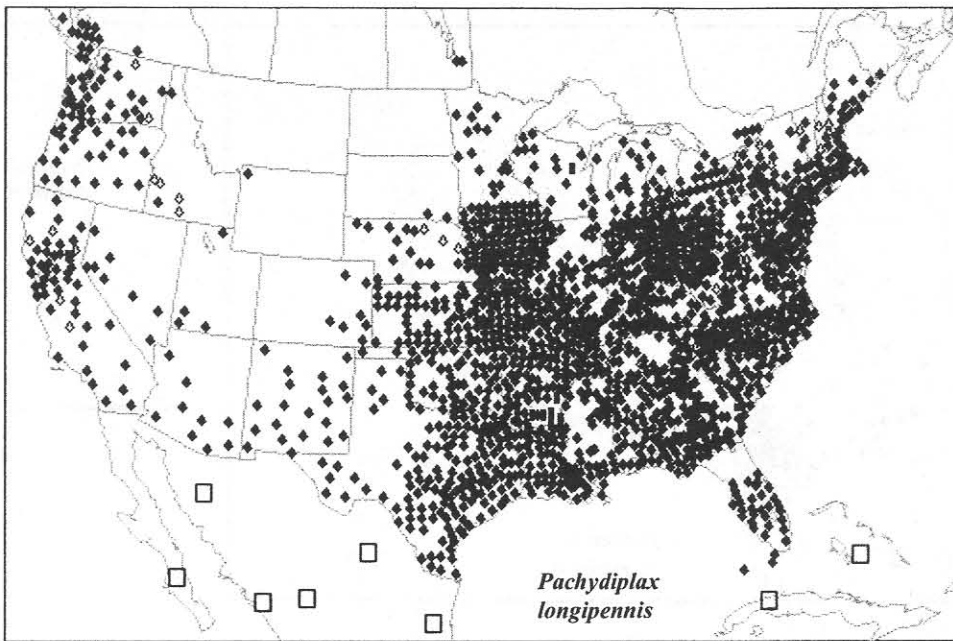


LIBELLULIDAE 12 *Libellula pulchella, luctuosa, quadrimaculata*

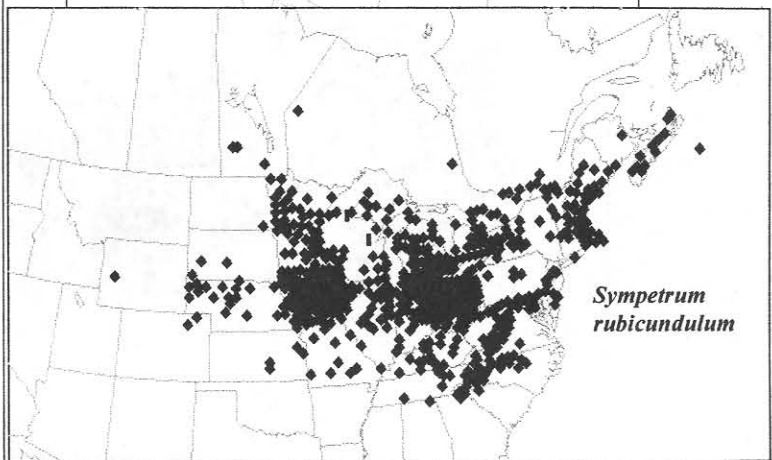
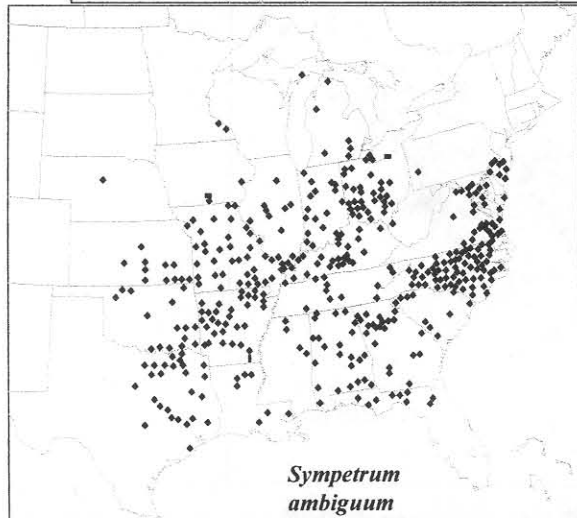
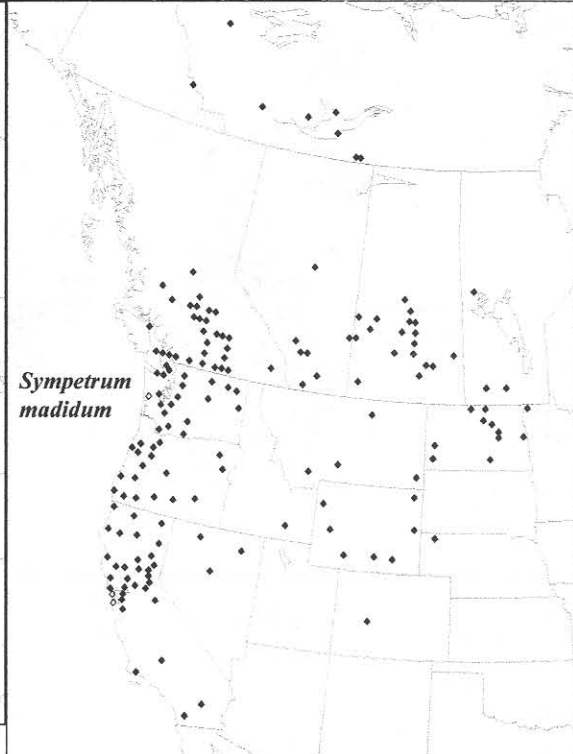
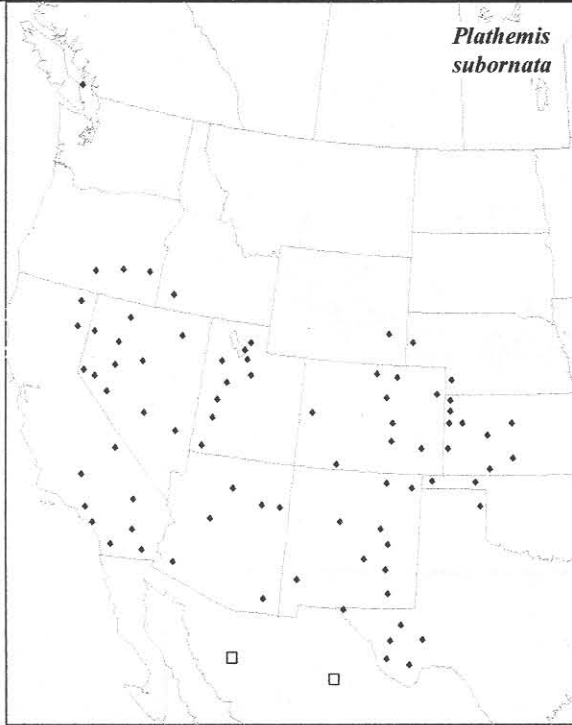
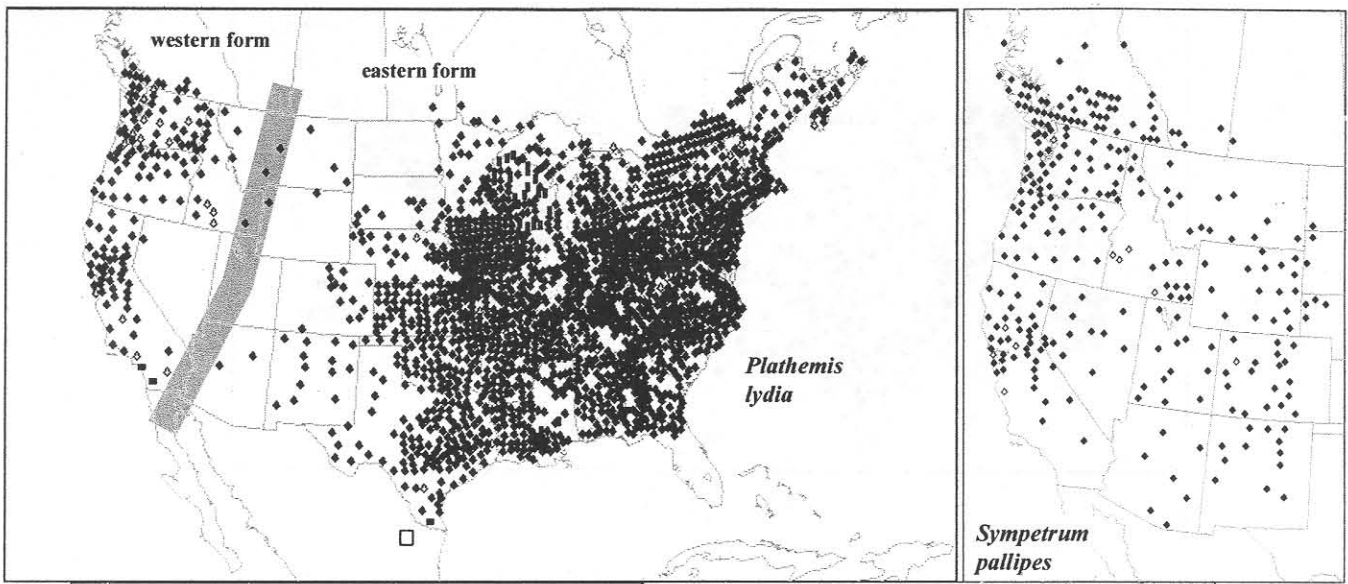


LIBELLULIDAE 13

Orthemis ferruginea, discolor, antillean species
Perithemis domitia, intensa, tenera
Sympetrum signiferum

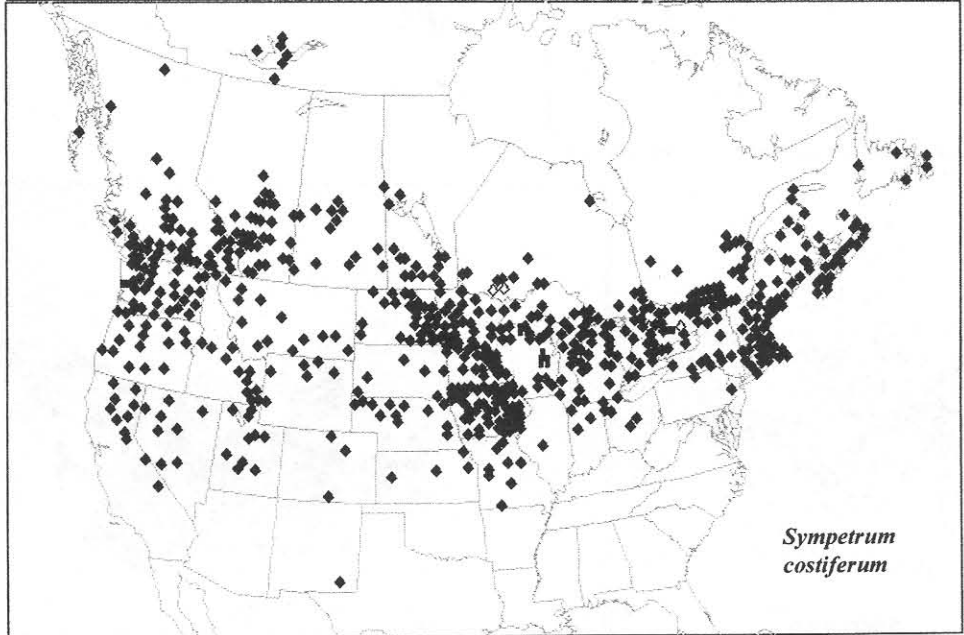
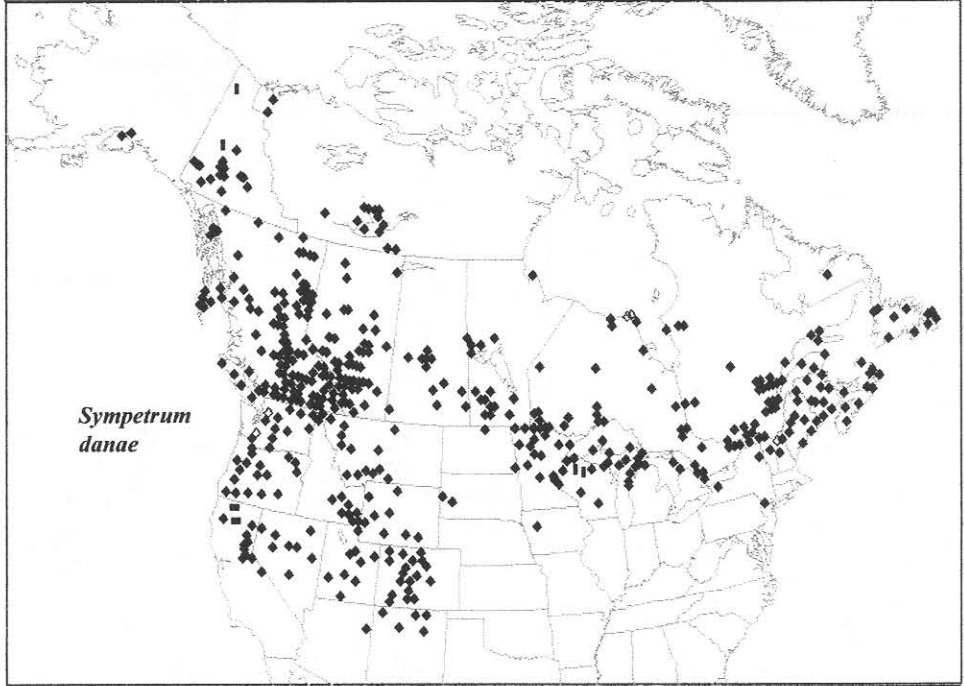
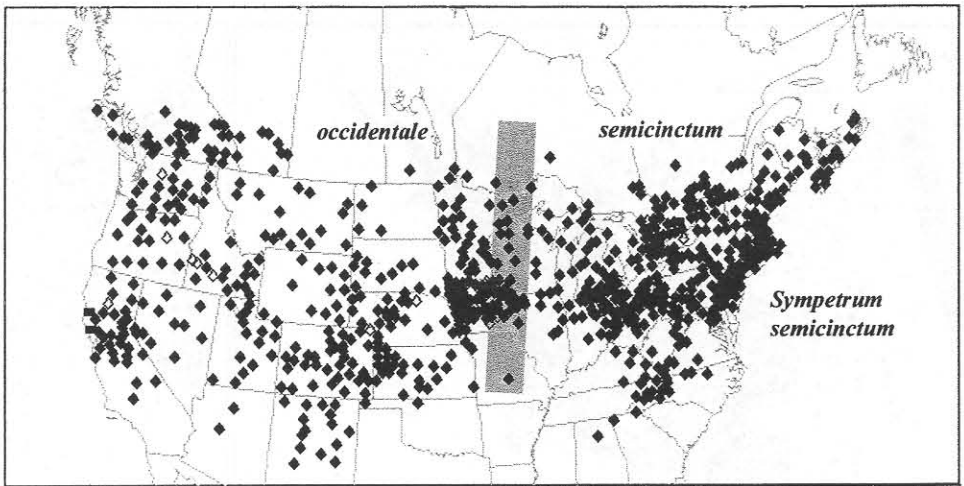


LIBELLULIDAE 14 *Pachydiplax longipennis*; *Pantala flavescens, hymenaea*

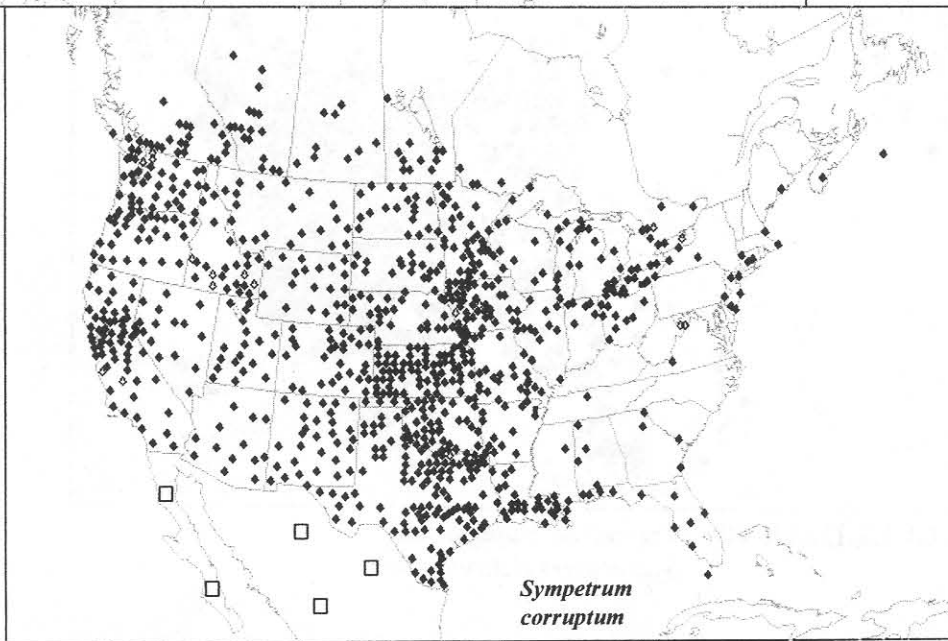
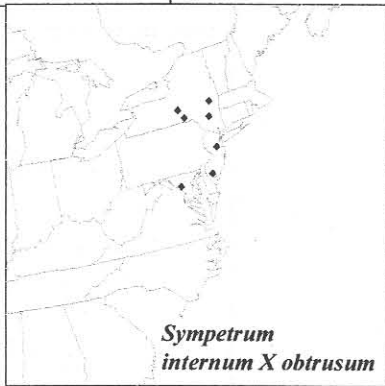
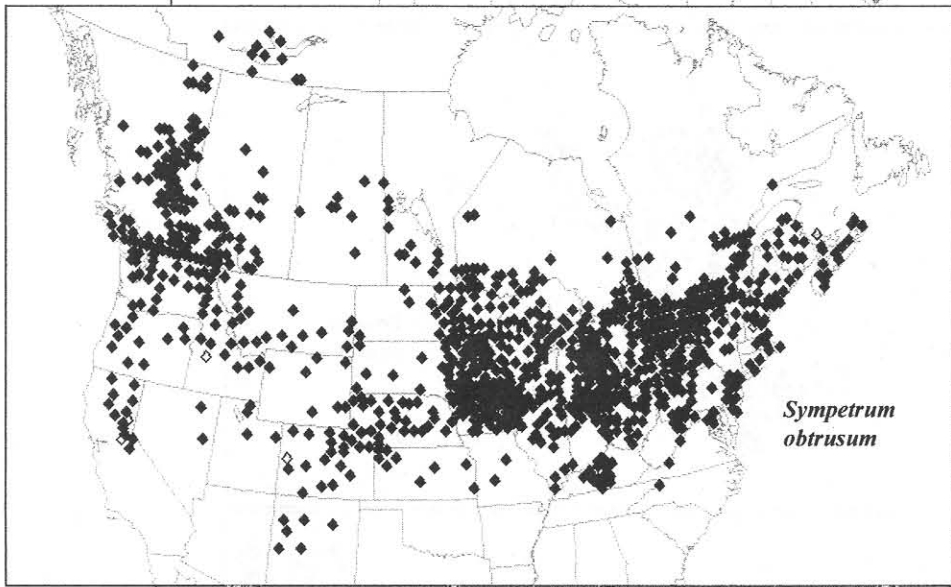
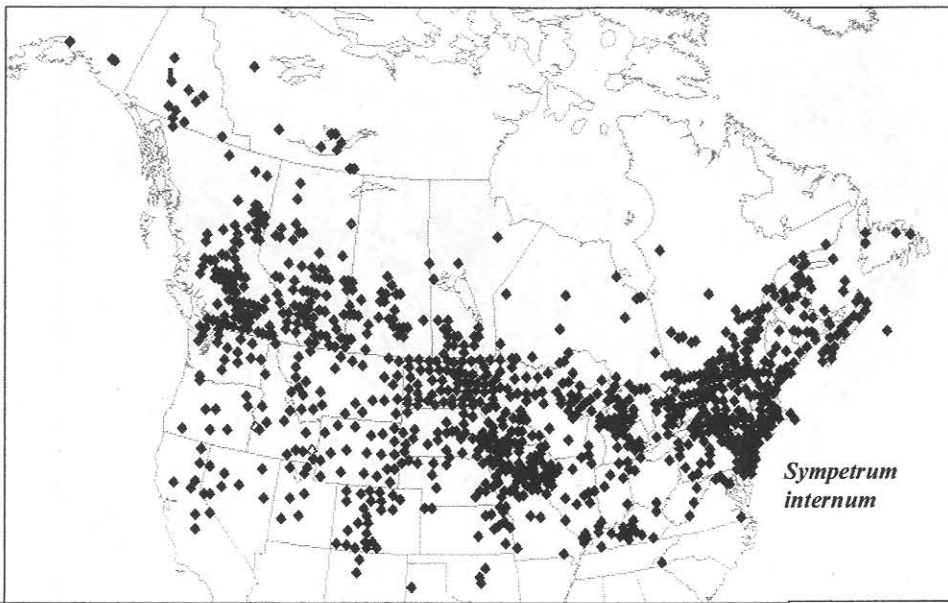


LIBELLULIDAE 15

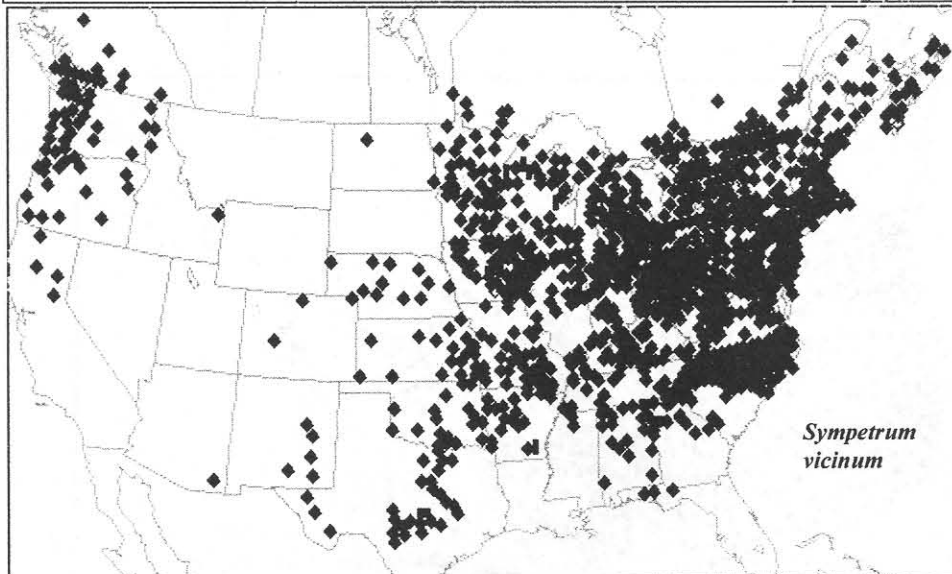
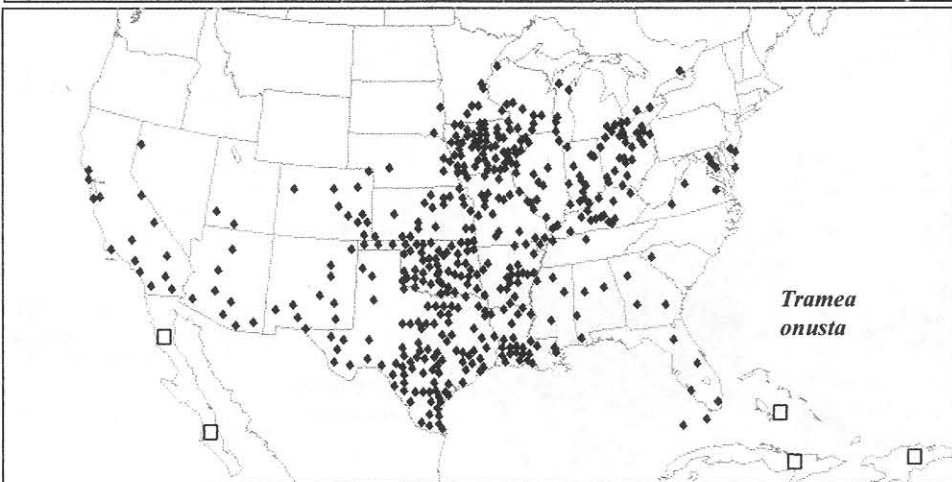
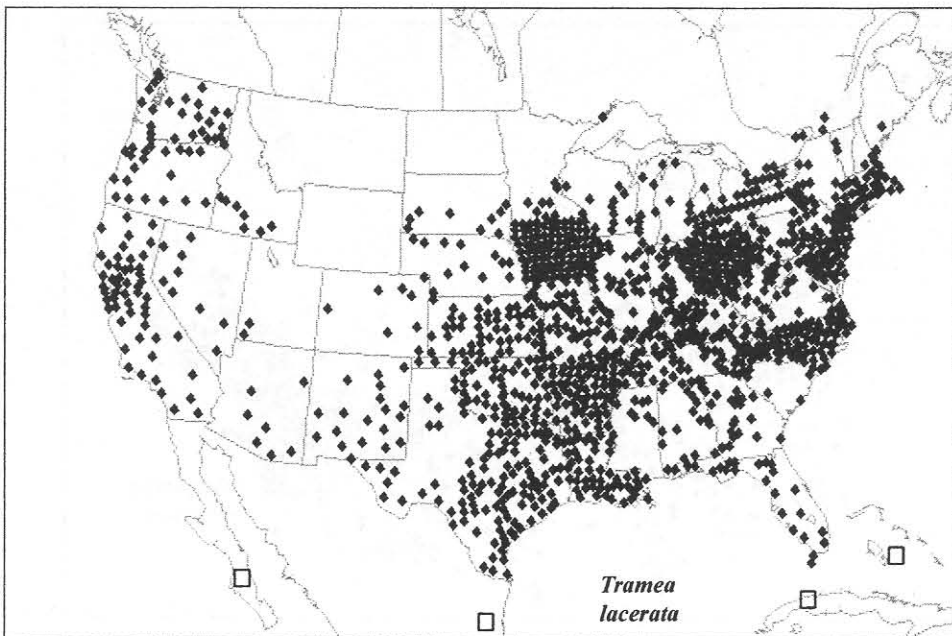
Plathemis lydia, subornata
Sympetrum pallipes, madidum, ambiguum, rubicundulum



LIBELLULIDAE 16 *Sympetrum semicinctum, danae, costiferum*



LIBELLULIDAE 17 *Sympetrum corruptum, internum, obtusum (incl. hybrid)*



LIBELLULIDAE 18 *Tramea lacerata, onusta*
Sympetrum vicinum